# THE LANCET.

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# The Hunterian Lectures

ON

# THE ANATOMY OF THE LONG BONES RELATIVE TO CERTAIN FRACTURES.

*Delivered before the Royal College of Surgeons of England on March 9th and 11th, 1908,*

BY RALPH THOMPSON, CH.M. VICT., F.R.C.S. ENG.,

ASSISTANT SURGEON, VICTORIA HOSPITAL FOR CHILDREN, CHELSEA; DEMONSTRATOR OF ANATOMY, GUY'S HOSPITAL; HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

## LECTURE I.

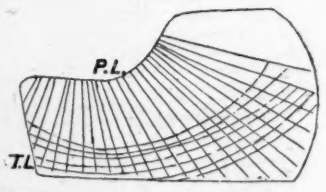
*Delivered on March 9th.*

MR. PRESIDENT, LADIES, AND GENTLEMEN,—Although much work has been done in connexion with the general and local pathological conditions which predispose to fractures of the long bones, yet perhaps sufficient attention has not been paid to their exact anatomy, especially as regards their internal structure. It was not without much hesitation that the subject of the two lectures, which I have been called upon to deliver in this College was chosen, and when one reflects that it is frequently said that anatomy is a limited subject and that no new discovery can be made in it, this hesitation must be excused. Moreover, so many great names have been, and still are, associated with the question of fractures, that there seems little to say concerning a subject about which Hunter, Astley Cooper, R. W. Smith, and Bennett have written and spoken. There seems still less to say concerning a subject which has been dealt with so thoroughly and successfully by x ray photographers. But, Sir, the preface to your work on the anatomy of joints has encouraged me to proceed with the subject, and, after all, so long as the cause of any fracture in any individual remains unknown, so long is there room for, at all events, some reflection as to the exact cause of a particular fracture.

I propose to deal with fractures of the long bones, but as the anatomical conditions governing the results of these fractures cannot be considered without a reference to ligaments I shall have no hesitation in raising the question of the functions of certain important ligaments.

In the ends of the bones of an ordinary adult man there are developed definite lamellæ running in the main direction along which pressure is transmitted. Certain other lamellæ are also developed gradually crossing these pressure lamellæ at right angles. These are known as tension lamellæ. Their presence generally increases the elasticity and therefore the strength of the bone. (Fig. 1.) In the young person as well as in the old

FIG 1.

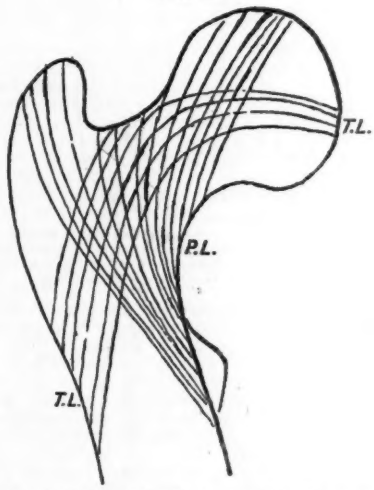



Showing pressure and tension lamellæ in os calcis. P. L., Pressure lamellæ. T. L., Tension lamellæ.

these pressure lamellæ are not well seen, nor are the tension lamellæ. In the young person the cancellous tissue at the ends of the long bones is so dense and the meshes are so fine that the pressure and tension lamellæ can hardly be demonstrated. In the old person the bone fibres are so obscured by the presence of fat that they are very difficult to discover. Although the fat is deposited generally in the substance of the cancellous tissue, yet it is apt to occupy certain definite positions and to occur in relatively large masses. For example, such definite masses may be found in the lower end of the radius, the upper end of the humerus, the inner end of the clavicle, and the upper end of the femur. In the tibia, too, a small mass of fat is developed at the root of the internal malleolus. These masses of fat appear to develop in the part of the bone which is least subjected to pressure. In the case of the clavicle and the femur as well as the upper end of the humerus they appear to develop between definite series of lamellæ.

I propose in my first lecture to deal with fractures of the neck of the thigh-bone. I shall first endeavour to show from recent specimens that these fractures have perfectly definite causes, the statement of which depends to a large extent upon the knowledge of the internal structure of the upper end of the femur. A study of the internal structure of the upper end of the femur throws such a flood of light upon certain deformities that I shall have no hesitation in referring also in some detail to the conditions met with in coxa vara and in old unreduced dislocations of the hip-joint. The usual conception of the internal structure of the upper end of the femur is that which is gathered from a coronal section such as this (Fig. 2). Now in this section is shown a series

FIG. 2.




Showing chief series of lamellæ in coronal section of upper end of femur. P. L., Pressure lamellæ. T. L., Tension lamellæ. Scale life size.

of arching lamellæ passing from the inner and outer surfaces of the shaft of the femur into the trochanteric region, the neck and the head. Those from the inner surface pass upwards into the region of the great trochanter and also into the lower part of the neck and so by additional series of lamellæ to the upper surface of the head. Those lamellæ from the outer surface pass also upwards into the great trochanter and then *viâ* the upper part of the neck of the femur to the lower portion of the head of the same bone. Now there are a series of lamellæ which do not thus form an arch and which pass from the upper surface of the head to the lower surface of the neck and thus to the compact layer on the inner surface of the shaft of the femur. The spur of bone which is represented in this obliquely transverse section of the upper end of the femur and which is known as the calcar femorale, or Merkel's, or Adams's arc is said to lie in the lines of pressure passing from the head and neck to the shaft of the bone. In order to study this spur of bone transverse sections are frequently made of the upper end of the femur, but such a section gives little indication of its position and none of its true function. Its position and function may be made out in a much more satisfactory manner by the reference to sections which are obliquely transverse—that is, parallel with the long axis of the neck. (Fig. 3.) These sections show, in addition to the calcar the position of which will be referred to later, a most important series of lamellæ passing from the anterior and inner part of the head of the femur to the posterior surface of the neck. These are very definitely shown in many sections which have been made; but it is only

fair to say that there is also a smaller and much less definite series of lamellæ which pass from the inner and posterior part of the head to the front part of the neck.

FIG. 3.

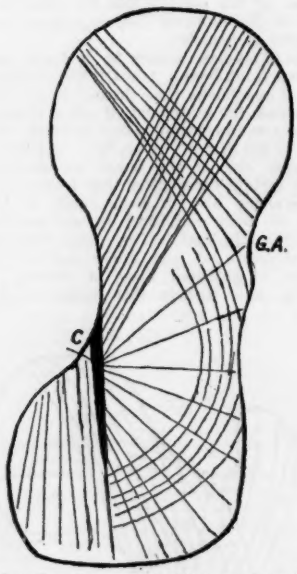
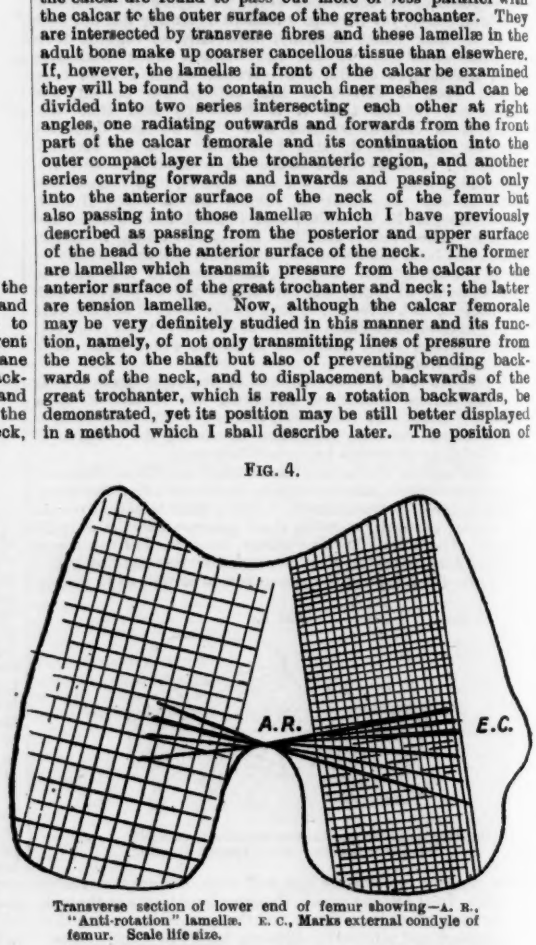



Diagram of section of upper end of femur cut parallel with long axis of neck, showing arrangement of lamellæ which counteract back thrust through head of femur. G. A., Groove for anterior ligament. C., Calcar. Scale life size.

The first and more important series are the same as the lamellæ which are described as passing from the upper and inner portion of the articular surface of the head to the under surface of the neck, but viewed in a different plane. This series therefore lies in an oblique plane and passes from within downwards, outwards, and backwards. They are very definite in this specimen of bone, and as they are the same as the lamellæ which pass from the upper part of the head to the lower surface of the neck, which all authorities agree transmit pressure, they obviously transmit pressure, not only from the upper and inner part of the head but also from its anterior part. We may therefore conclude that pressure is transmitted through the upper, inner, and anterior part of the head of the femur to the posterior and inferior surface of the neck. Now this series of lamellæ help to explain four conditions which are met with: the first, an anatomical structure; the second and third, pathological conditions; and the fourth, a condition due to traumatism. The first is the "calcar femorale," the second the deformity known under the name of coxa vara, the third the triangular acetabulum associated with old unreduced dislocated hips, and the fourth the line of fracture in typical intracapsular fracture of the neck of the femur. These oblique series of lamellæ which pass into the posterior surface of the neck, which is formed of thick compact tissue, pass in over a distance of about five-eighths of an inch, and, externally, some pass into the anterior surface of the calcar femorale.

Now, although one must regard these lamellæ as pressure lamellæ, yet it is not generally recognised that therefore pressure which is transmitted from the trunk to the lower limbs passes not only through the upper part of the head of the femur but also through its anterior part. Now, these three specimens, representing that degenerative process known under the name of osteo-arthritis, show distinctly that the eburnated remnant of the articular surface of the head looks in a direction not only upwards and inwards but also forwards. It is therefore evident that the chief pressure in these bones has passed through the upper and anterior part of the head of the femur; and therefore these specimens afford ample proof that the pressure is transmitted along the oblique series of lamellæ which pass to the posterior surface of the neck in the region of the calcar femorale. The function of the calcar is usually said to be that of transmission of the lines of pressure from the head and neck to the shaft of the femur. This is very probably correct, but only partially so, and no explanation of its relatively posterior position has yet been offered. By a reference to the oblique series of pressure lamellæ its position and function are rendered clear. Not only does it transmit the lines of pressure falling on to the posterior surface of the neck, but it also enormously increases the strength of the neck. And for this reason. Suppose that in the diagram (Fig. 3) the chief lines of pressure pass above and behind the centre of rotation of the head of the femur, then there is a tendency for the great trochanter to be pushed forwards, and this tendency to swing forwards is restrained by the attachment of the external rotator muscles of the thigh and the pull of the tense posterior part of the capsule of the hip-joint. Thus there is a tendency for the great trochanter to be bent backwards, a tendency which is very much diminished by the presence of the calcar femorale. If now a further examination of the sections of bone cut parallel with the long axis of the neck be made, the bony lamellæ which are seen behind the calcar are found to pass out more or less parallel with the calcar to the outer surface of the great trochanter. They are intersected by transverse fibres and these lamellæ in the adult bone make up coarser cancellous tissue than elsewhere. If, however, the lamellæ in front of the calcar be examined they will be found to contain much finer meshes and can be divided into two series intersecting each other at right angles, one radiating outwards and forwards from the front part of the calcar femorale and its continuation into the outer compact layer in the trochanteric region, and another series curving forwards and inwards and passing not only into the anterior surface of the neck of the femur but also passing into those lamellæ which I have previously described as passing from the posterior and upper surface of the head to the anterior surface of the neck. The former are lamellæ which transmit pressure from the calcar to the anterior surface of the great trochanter and neck; the latter are tension lamellæ. Now, although the calcar femorale may be very definitely studied in this manner and its function, namely, of not only transmitting lines of pressure from the neck to the shaft but also of preventing bending backwards of the neck, and to displacement backwards of the great trochanter, which is really a rotation backwards, be demonstrated, yet its position may be still better displayed in a method which I shall describe later. The position of the calcar is therefore chiefly concerned with the tendency of the neck of the femur to be bent and enormously increases the strength of the neck. The calcar is developed in connexion with the development of the oblique series of lamellæ which pass from the inner, upper, and anterior part

FIG. 4.




Transverse section of lower end of femur showing—A. R., "Anti-rotation" lamellæ. E. C., Marks external condyle of femur. Scale life size.

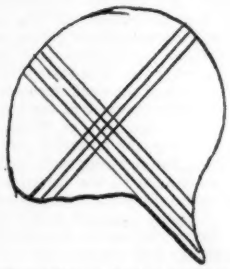
of the head of the femur to the posterior and under surface of the neck.

Although the calcar femorale, considered in its function of preventing bending of the neck, is unique in its size, it is interesting to note that there are other well-marked bars or bolts found in a different part of the femur, thrust as it were into the substance of the bone, and which obviously restrain a tendency of the portion of bone in which they are situated to be bent. In the lower end of the femur, the rotatory movements of which are checked by very strong ligaments, quite obvious transverse bars of bone are found in transverse sections, passing from the bottom of the intercondyloid notch into the substance of the internal and external condyles, as indicated in Fig. 4, and demonstrated in specimens which I have cut. At their origin these bars may be collected together so as to form a small spur.

In the second place, these oblique lamellæ explain the rotation backwards of the great trochanter occurring in some cases of coxa vara. Now, supposing that the pressure be transmitted behind and above the centre of rotation of the head of the femur in the acetabulum, as has been before pointed out, it is clear that there is a tendency for the great trochanter to be rotated forwards. But it must always be remembered in connexion with the deformities of bone that one cannot consider the bone alone but must also take into account the attachment of muscles and of ligaments. So here the tendency of the great trochanter to rotate forwards will be restrained by the attachment of the external rotator muscles of the thigh in the region of the digital fossa and by the posterior part of the capsular ligament of the hip-joint. Clearly, therefore, if the bone be rendered weak, either by disease, such as rickets, or injury, such as a separated epiphysis of the head of the femur, or a greenstick fracture of the neck of the femur, there will be a tendency for the great trochanter to be rotated backwards. Hence the backward displacement of the trochanter occurring in many cases of coxa vara, and in this specimen of impacted intracapsular fracture from the museum of this College will be easily explained. On the other hand, supposing that the pressure lies in front of the centre of rotation of the head of the femur in the acetabulum, then there will be a tendency for the great trochanter to be swung backwards. But this tendency will be restrained by the attachment of the anterior part of the capsule of the hip-joint, and so the great trochanter will be bent forwards. Therefore, a knowledge of those lamellæ is important in connexion with the deformities associated with the condition of coxa vara. They also serve to explain the cause of the triangular acetabulum in cases of old-standing dislocation of the hip, for the pressure which is transmitted through the upper and anterior part of the head of the femur will also be transmitted through the upper and anterior part of the acetabulum, therefore when the head of the femur is dislocated the upper and anterior lip of the acetabulum will be crushed down on to the posterior and lower lip of the same cavity, with the result that a triangular acetabulum will be produced. I have here three specimens showing (1) the normal circular acetabulum; (2) a flattened acetabulum in a case of old-standing chronic disease of the hip-joint, which is, you will observe, flattened from above downwards and backwards; and (3) a triangular acetabulum in which the head of the femur had rested in its new socket for a period of over 40 years. But whilst these oblique series of lamellæ give us an indication of the cause of coxa vara and of the triangular acetabulum of old dislocated hip-joints it also offers, I venture to think, a very reasonable explanation of the cause of fractures of the neck of the thigh-bone which lie within the capsule of the joint.

The line of fracture in intracapsular fracture passes as a rule from the anterior surface to the posterior surface. It begins about one-eighth of an inch from the articular surface of the head in front and passes backwards transverse to the long axis of the neck for a distance of two-thirds of the total thickness of the neck; it is then deflected along the oblique series of lamellæ which I have described. Now in that situation in which the line of fracture begins in front is situated the groove for the anterior ligament of the hip-joint, the position of which is indicated in this diagram. I have here two specimens which throw a great deal of light upon the mechanism of this fracture. This single diagram (Fig. 5) may be considered to represent a section of bone in two planes. It may represent, on the one hand, the common line of fracture which is well shown in specimens in the Museum of this College and in the London Hospital Museum, and which runs from above downwards and outwards, or it may represent an obliquely transverse section of a fracture made parallel with the long axis of the neck of the femur; so that in the first place this tongue of bone lies on the inferior aspect of the neck, or, as in the second case, it represents the tongue of bone which lies on the posterior aspect of the neck of the femur. Now, I have cut across such

FIG. 5.



Showing transverse section of head in intracapsular fracture showing line of fracture deflected along course of pressure lamellæ.

a specimen as this in two cases: one where there was a posterior tongue, and the second where there was an inferior tongue. The first specimen is from a subject in the dissecting room at Guy's Hospital; the second specimen was given to me by Dr. C. W. Greene of Gloucester. And in both cases it will be found that these tongues of bone are due to a deflection of the line of fracture along these lamellæ, either vertically or horizontally. Now, it is hardly conceivable, on external anatomical grounds, to suppose that a fracture started from below or from behind. But this starting place is rendered more doubtful by the fact that had it started in this position, that is to say, either behind or below the neck of the femur, surely it would have continued to pass along those lines of pressure lamellæ and involve the head which it rarely does. As a matter of fact, for two-thirds of the total thickness of the fracture the line of fracture has been transverse to the long axis of the neck. We may therefore reasonably assume that these specimens point to the fracture having begun either above or in front of the neck of the femur, and the line of fracture has then been deflected along the course of the lamellæ or the grain of the bone.

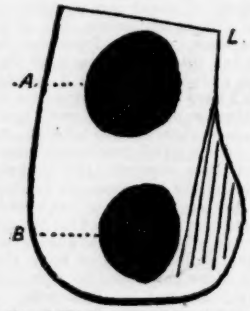
Now, this specimen of bone, the transverse section of which I have indicated in Fig. 3, shows that quite close to the head of the femur there is a groove (G.A.). This groove, as is indicated by a transverse section of a formalin-hardened hip, is quite clear, and shows that the structure responsible for this groove is the anterior ligament of the hip-joint. Now, although the anterior ligament of the hip-joint may produce a groove on the neck of the femur close to the head, two other conditions are met with as a result of the pressure of the anterior ligament upon the inner part of the neck of the femur. These two conditions are: first, a prolongation of the articular surface of the head on to the front surface of the neck of the femur; and secondly, a distinct raised impression separated by a distinct and narrow groove from the head of the femur. This may be apparently covered by cartilage in a recent state. Now, if this ligament produces any one of these three conditions which I have described, either the groove or the prolongation of the articular surface of the head, or the raised impression, it is clear that it must exercise some pressure upon the part against which it lies. And when we consider that it is put on the stretch every time we stand in the erect position this pressure will be easily explained. Now, when a patient gives a history of the accident, which in his case is associated with intracapsular fracture of the neck of the femur, two points are brought out: either that he tripped up over a carpet or some such object and fell (frequently it is said that he tripped up over the other foot), or he may give the history, as he frequently does, of having apparently recovered himself and then felt that something had gone in the region of the hip. What has happened in the first place is that, owing to the extreme flexion which has been produced and to the internal rotation, and possibly also to the adduction of the femur, the anterior part of the surface of the neck has come into contact with the anterior and upper lip of the acetabulum.

Now I must beg your leave to digress for one moment whilst I go a little more in detail into the question of the movements of the hip-joint which are concerned with this variety of fracture. When the hip-joint is disarticulated the anterior surface of the neck comes much more readily into contact with the anterior and upper part of the rim of the acetabulum than do the corresponding posterior parts of the same portions of bone. This may be due to the different shape of the anterior and posterior surface of the neck of the femur and the greater concavity of the posterior surface of the neck than on the anterior surface of the neck. Now, although these points are undoubtedly true in the disarticulated joint, yet from a careful examination of the undissected joint it is clear that another reason why the posterior surface of the neck does not come into contact with the corresponding portion of the acetabulum is that the very strong anterior ligament or Y-shaped ligament of Bigelow prevents it. Now, the posterior part of the capsule of the joint is nothing like so strong and certainly would not offer any marked resistance to the internal rotation of the hip-joint. But a structure which has been much abused because it is very rarely absent and very occasionally atrophied, is, I venture to think, responsible to a certain extent for diminishing the amount of internal rotation, flexion, and adduction, and thus preventing the anterior surface of the neck from coming into contact with the corresponding portion of the acetabulum; and this structure is the "ligamentum teres" of the hip-joint. This is considered by many anatomists to be a useless structure. It is curious that out of the 150 hip-joints that I have opened I have in only one case found a ligamentum teres atrophied and easily ruptured. Moreover, it is put on the stretch just when the limb is internally rotated and adducted, as well as flexed, and it is therefore clear that the function of the ligamentum teres is to prevent undue contact taking place between the anterior surface of the neck and the corresponding portion of the acetabulum. It is not quite fair, I think, to say because it is occasionally absent that therefore the ligamentum teres has no function. Absence, in the case of the tibia, is not brought into account when the question of the function of this bone is being considered. Authorities may say that the ligamentum teres is an atrophied part of the pectineus. Then one may ask the question, Why, if it is useless, has it remained at all? The ligamentum teres, therefore, tends to prevent this anterior surface of the neck of the femur from coming into contact with the acetabulum.

We may now go back to the question of intracapsular fracture of the neck of the femur and we may assume that the pressure starts from the front of the upper part of the neck. Now, if the patient be in the flexed position when the accident happened, the ligamentum teres is not strong enough to resist the sudden force which is put upon it and so it may be either stretched or ruptured. The anterior surface of the neck of the femur then comes into forcible contact with the corresponding part of the acetabulum and the fracture is begun (Mr. Arbuthnot Lane). The line of fracture then passes for some distance in a transverse direction along the neck until it meets with these lamellæ coming down from the anterior upper surface of the head of the femur to the posterior and under surface of the neck of the same bone, and is by them deflected so as to form either a posterior or an inferior tongue of bone. But an explanation must also be found for a similar injury which happens where the patient says that he made an effort to recover himself and then felt something go. Now, in the effort to recover oneself one naturally hyperextends the hip-joint and more tension is put upon the strong anterior ligament of the hip-joint, with the result that it is forcibly stretched over the neck of the femur, close to the head of that bone. Now, if we make an obliquely transverse section of the head, neck, and trochanteric region of the femur we shall find that the compact tissue lying at the bottom of the groove or impression on the neck of the femur against which the anterior ligament is resting is very thin and therefore presumably easily liable to fracture. And therefore one may conclude that in the hyperextended position of the limb, such a position as is taken up when a patient attempts to recover himself from falling—that in that position, I say, the anterior ligament of the hip-joint is in part responsible for intracapsular fracture of the neck of the femur.

It is often said that the line of fracture in intracapsular fracture of the neck of the femur occurs at the weakest spot in the neck. This weakest spot is presumably at that place where most degenerative fatty changes are found—i.e., half way along the neck, where indeed a mass of fat may be found between the main series of lamellæ, spherical in shape, and as much in some cases as half an inch across. Now, although fracture may occur through this spherical mass, yet in most cases (Fig. 6) apparently the line of fracture runs nearer the

FIG. 6.




Transverse section of distal fragment of intracapsular fracture showing fatty patches A. and B. Note that line of fracture L. does not pass through A.

head than this, and therefore we may assume that in many cases at any rate the position of the line of fracture is not dependent only upon the structure and degeneration of the bone but also upon external influences as well, such as, for example, the rim of the acetabulum and the anterior ligament of the hip-joint. It has been asserted that the absence of the calcar femorale is responsible for the occurrence of intracapsular fracture. That this statement is very probably correct there is no doubt, but it is because the calcar enormously increases the strength of the neck not so much in transmitting vertical pressure, as by its power to prevent bending of the neck, as we have seen, backwards or forwards. I have here a specimen showing the association of an intracapsular fracture and a calcar femorale.

Now, although the results of intracapsular fracture of the neck of the femur are known thoroughly, still it will not be out of place, I think, just to refer to these two specimens, one taken an unknown time after the injury, the other removed four years after the accident. And it will be noticed that there has been a complete atrophy in this second specimen, not only of the neck but also of a great part of the upper portion of the shaft of the femur. Now, although one can have few remarks to offer upon the question of treatment, I would venture to quote one case which, by the kindness of Mr. C. J. Symonds and Mr. L. A. Dunn, I was enabled to operate upon. A man sustained an intracapsular fracture of the neck of the thigh bone and extension was applied both in a Hodgen's splint and with plaster of Paris. The hip remained stiff and gave him so much pain that it was impossible for him to walk about without two crutches. He eventually consented to have the head of his thigh bone removed, and though the wound did not heal up altogether kindly still it did eventually heal up, and healed up completely. Since that time the man has recovered the use of his limb. He only uses a stick to move about with and, above all, he has lost his pain. I shall not have time to go into this question in full, but it is certainly a treatment which might be adopted with advantage in many of these cases of ununited intracapsular fracture of the neck of the thigh bone.

We must now go into the question of extracapsular fracture of the neck of the thigh bone. And in this connexion it is important to know that there is a primary line of fracture which is the true extracapsular fracture, and that this line of fracture separates a portion of bone formed of the head and neck of the femur. This portion of bone (Fig. 7) which is separated bears a remarkable resemblance to those tools which are used by masons and slaters for the purpose of cutting bricks and slates. They have a broad head, a narrower neck, and a broader blade. They are known as bolster chisels. The resemblance is still further increased when we consider that these chisels frequently have at one end of the blade a sharp point. I think when I hold up this specimen and

FIG. 7.

FIG. 8.

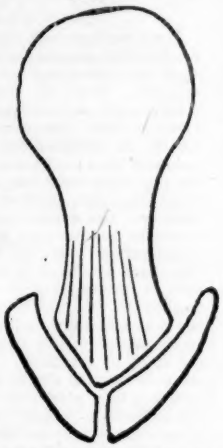


FIG. 9.

FIG. 10.

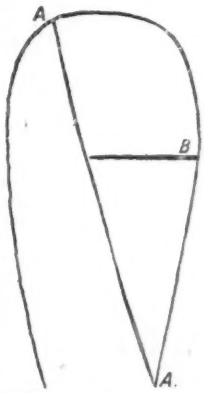



FIG. 7.—Diagram representing chisel of head and neck separated by "extracapsular" fracture of the neck of the femur. * Represents position of lower limit of "calcar femorale." Scale about one-half life size.

FIG. 8.—Usual figure indicating section of extracapsular fracture of neck of femur. Scale about one-half life size.

FIG. 9.—Section (lower than Fig. 8) showing blade of chisel formed by C., Calcar femorale. Scale about one half life size.

FIG 10.—Diagram indicating outer surface of trochanter and shaft of femur showing—AA., Vertical line of fracture. B., Horizontal line of fracture produced in splitting of upper part of femur. Scale about one-half life size.

show it to you, or this specimen, it will be clear that the portion of bone which is separated by the primary fracture at the base of the neck is a most dangerous weapon, and it is upon this chisel and its shape that the secondary fractures, the position of which is remarkably constant, depend. Now if we examine this chisel by sections made through the long axis of the head and neck bone fibres will be seen radiating from the narrow part into the broad part of the neck, as is indicated in this diagram (Fig 8). If, however, a section be made parallel with the former but lower down the neck, the apex of the wedge—that is, the cutting edge of the blade—is formed by the calcar femorale (Fig. 9). According to Hamilton and Gant, and as shown in some of the specimens illustrating these lectures (Fig. 10), there are in addition to the primary fracture, which we have seen separates the chisel portion of bone from the shaft and trochanteric region of the femur, two other lines of fracture commonly present which pass through the great trochanter and upper part of the shaft of the femur. These fractures may be called secondary. They may be distinguished as vertical and horizontal, although this is not quite an accurate conception of their direction. The first or vertical line of fracture runs from the front part of the summit of the great trochanter downwards and backwards through the outer surface of the great trochanter and shaft of the femur to the lower part of the spiral line below the small trochanter, and then turns upwards and forwards to join the primary fracture at the lower and outer part of the neck of the femur. The second, or horizontal line of fracture, passes from the posterior intertrochanteric line just below the digital fossa outwards and forwards, either slightly downwards or slightly upwards, through the base of the great trochanter, to meet the vertical line of fracture.

The causes producing these lines of fracture, including the primary line as well as the secondary lines, may now be considered. In the primary line the line of fracture behind occurs under shelter of the posterior intertrochanteric line, where the compact bone is exceedingly thin and where the compact lamina forming the inner surface of the posterior intertrochanteric line or wedge passes into the compact lower lamina forming the posterior surface of the neck. These two laminæ run into each other at practically an angle of 90°. These two anatomical conditions are potent causes in determining the position of the posterior line of fracture, and *mutatis mutandis* the upper limit of the fracture may be explained in the same way. The anterior line of fracture occurs just where the thick compact lamina on the front of the great trochanter passes suddenly into the thinner compact lamina on to the anterior surface of the neck. Numerous vascular foramina may be observed lying along this line and these tend to weaken the bone in this situation. The apex of the wedge and the shape of the chisel blade of the neck is formed, at any rate in the lower half of the neck, by the calcar femorale. Moreover, the lower limits of the fracture correspond to the lowest level of the calcar femorale, as shown in this specimen of unimpacted extracapsular fracture of the neck of the femur (*vide* also Fig. 7). This specimen also shows the calcar femorale lying exactly opposite the secondary vertical line of fracture, but this relation is seen more clearly in this specimen of an extracapsular fracture of the neck of the femur. The vertical line of fracture may, then, be considered to be due to the calcar being driven against the great trochanter and upper part of the shaft of the femur. The horizontal secondary fracture may be, perhaps, due to the rotation of the shaft of the femur backwards, which is practically always a prominent sign of fracture of the neck of the femur. This rotation of the shaft causes the posterior intertrochanteric ridge to impinge forcibly against the posterior surface of the neck, exactly where the calcar rises from the posterior compact lamina of the neck, as shown in this specimen, and so a horizontal line of fracture is produced. From the illustrations of actual specimens it may be concluded that the calcar femorale plays an important part in the production of the shaft of the blade of the chisel portion of the head and neck, separated from the rest of the bone, in that it not only supports the cutting edge of the blade but also its pointed lower limit. When this chisel is driven into the great trochanter and upper part of the shaft of the femur, its blade, formed and supported by the calcar, is certainly responsible for the vertical splitting of the shaft. Strengthening of the posterior compact lamina of the neck by the calcar may also be held responsible for the horizontal fracture.

A few remarks may now be made with regard to the anatomy of the calcar femorale. I said at the beginning of my lecture that it might be studied in an incomplete manner by cutting transverse sections of the upper end of the femur, that it might be better examined by cutting obliquely transverse sections parallel with the long axis of the hea d and neck of the femur. But it may be still better examined by a somewhat tedious dissection, in which the outer surface of the upper portion of the great trochanter is trephined and the loose cancellous tissue picked away with some sharp steel instrument so that the calcar femorale remains intact. This is the plan which was recommended by Bigelow. In such a specimen the calcar is seen as a nearly vertical ledge of compact bone, having an anterior surface, a posterior surface, an internal attached base, and an outer edge. This ledge of bone passes downwards and slightly forwards, beginning above in the compact tissue of the posterior sloping

surface of the neck, just beneath the groove for the obturator externus tendon on its way to the digital fossa, and terminating below by gradually fading away into the compact tissue of the shaft of the femur, underneath and external to the upper part of the spiral line. Roughly, it may be said to extend from the base of the great trochanter to the lowest part of the base of the lesser trochanter. The calcar is half an inch deep or more in its deepest part, which is just above its centre, and its edge lies at the junction of the posterior and middle thirds of a line drawn between the anterior and posterior surfaces of the neck of the femur. The outer edge varies in position according to the depth of the calcar. It may be continuous with fine laminæ of bone running nearly parallel with each other towards the compact layer of the outer surface of the upper part of the femur. The calcar is said to disappear in old age, but I have collected specimens showing a well-marked calcar in males aged 70, 71, 80, and 87 years; and in two females aged 65 and one aged 83 years. In the case of the male aged 87 years the calcar is well seen in the right femur, of which there was an unimpacted extracapsular fracture, and there is also a good calcar in the left femur removed from the same case. The calcar was not present in any femur of any fœtus or young infant which I have examined, but there was a calcar present in three male subjects aged three years each and in one female aged six years. The calcar was not found in two subjects, aged 21 and 27 years respectively, the former a female and the latter a male. The deposition of fat in the region of the neck of the femur may also profitably be considered here (Fig. 6). As age advances fat is deposited in two places in considerable quantity, forming a large globular mass at least half an inch in diameter. One of these masses of fat lies in the narrow part of the neck, about its middle. The other mass lies in front of the anterior surface of the calcar. The former deposit may possibly predispose to intracapsular fractures of the neck of the femur; the latter deposit of fat to the splitting of the upper end of the femur described in connexion with extracapsular fracture. For in this case fat offers less resistance to the impaction of the fragment of head and neck separated from the rest of the bone. A reference to sections passing through the neck of the femur in young adults shows that the cancellous tissue is much denser than in old people, and therefore we may expect that if a fracture through the base of the neck occurs in young people, then the calcar femorale will not form such a dangerous weapon as in old people in whom fat is deposited.

There are now two difficulties to be considered in connexion with the production of the secondary vertical fracture by the calcar. The first is, that the splitting is much longer than the calcar. This may be explained by referring to the fact that the splitting which a chisel may produce is frequently much longer than the blade of the chisel itself. Another difficulty is that while the calcar runs downwards and forwards, the vertical fracture runs downwards and backwards. In many cases, however, of fracture through the neck of the femur flexion of the lower fragment is a marked clinical and anatomical feature. Flexion of the lower fragment brings the calcar exactly opposite to, and parallel with, the vertical line of fracture which is produced. It is generally agreed that the calcar lies in the lines of pressure transmitted from the head to the shaft of the femur. I have, I think, also proved conclusively that it has an additional function to this and probably a more important function—i.e., to prevent the natural tendency to curvature forwards or backwards of the great trochanter. Now, whilst it is denied by authorities that impacted extracapsular fracture follows upon falls on the feet, yet it is possible that such a condition might occur. In such a case, the lower fragment being forced upwards by the fall, and dragged inwards by the tonic action of muscles and the upper fragment tending to rotate on an antero-posterior axis, the outer edge of the head and neck—that is, the blade of the chisel—is carried upwards and cuts the trochanter and upper part of the shaft of the femur.

The conclusions arrived at may thus be briefly summarised with regard to the calcar. It does not invariably disappear in old age. It is not invariably present, even in young people. The calcar in extracapsular fracture of the neck of the femur is responsible for the edge and lower end of the chisel, whose other parts are represented by the head and neck of the femur. The calcar certainly produces the vertical secondary fracture of the great trochanter and upper part of the shaft of the femur and may be held partially responsible for the horizontal secondary fracture near the base of the great trochanter.

*Varieties of Extracapsular Fracture.*

Three well-marked varieties of extracapsular fracture may be classified anatomically. This classification is dependent upon the secondary lines of fractures which I have described. There is also an associated condition rarely present—viz., a transverse fracture of the upper end of the femur. Thus the simplest condition is in those cases where a quadrilateral portion is separated from the posterior part of the great trochanter—i.e., where there is the transverse secondary line of fracture and where there is only the upper portion of the secondary vertical line of fracture. The second condition, which is perhaps commoner, is where the vertical secondary line of fracture is fully developed as well as the transverse line of fracture. The third condition is where the vertical line of fracture only is produced and so a large portion of the great trochanter and shaft is detached as a single piece. In the first and third variety only a single piece is broken off; in the second variety two pieces at least are broken off from the shaft of the bone. In this specimen, however, where there is only a single quadrilateral piece broken off, a tendency to a production of a complete secondary vertical line of fracture is shown by a crack running through the shaft of bone exactly in the same position as that portion of the line of the vertical fracture which runs upwards and inwards to join the primary line of fracture. It is evident, therefore, that the rotation backwards takes place immediately after the primary fracture, and so the transverse secondary fracture has been produced which has arrested the completion of the vertical secondary fracture, the production of which has, however, begun. A fourth variety of which I have a specimen, and for which I can give no adequate anatomical explanation, is where the typical extracapsular fracture is somewhat obscured by a transverse fracture of the upper end of the shaft of the femur.

*Results of Extracapsular Fracture of the Neck of the Thigh-bone.*

I have, thanks to the kindness of the surgeons of Guy's Hospital, especially Mr. R. C. Lucas, Mr. C. H. Golding-Bird, and Mr. C. J. Symonds, been able to collect a few cases of extracapsular fracture, the after-histories of which are accurately known. In most of the cases there is some obvious deformity, and even in the most favourable cases—I mean those which show no external rotation and in which movement is free—there is at least an inch shortening. The great trochanter is displaced one inch above Nélaton's line. The shortening, therefore, in these cases is due to a diminution which the angle makes with the neck. Now, if the process of disimpaction be adopted as treatment or not, it will be clear that the upper fragment cannot be controlled by any form of treatment, except, of course, in those cases in which an open operation is performed. The usual treatment adopted, or rather a common form of treatment, is that in which extension is applied by means of a Liston's long splint. Now, if the thigh be kept parallel with its fellow and with the main axis of the body, and if disimpaction be adopted, one perhaps cannot cavil at the treatment, but if it be adopted great care must be taken to see that the lower fragment is not only rotated and extended but also forcibly abducted so as to release the impaction downwards and outwards of the base of the neck. If disimpaction be not practised, then extension should be made with the thigh in the abducted position, so as practically to counteract the tendency of the angle between the neck and shaft to diminish. Another form of treatment which has for many years, thanks to the advocacy of Mr. Golding-Bird, been adopted at Guy's Hospital is that by extension with the aid of Hodgen's splint. Now there is one disadvantage about a Hodgen's splint and it is this—that it keeps up of necessity the flexion of the lower fragment, which is a common condition, and unless the treatment be preceded by disimpaction this is a disadvantage.

I have, I think, shown that the internal structure of the upper end of the femur plays a great part in explaining certain deformities of the neck, in enabling us to deduce the cause of fracture in intracapsular fracture of the neck of the thigh bone and also what a great part it plays in the mechanism of extracapsular fracture of the thigh bone. Now, although numerous attacks have been made upon the names "extracapsular" and "intracapsular," and although the term "extracapsular" as applied to these

fractures is obviously incorrect, yet there is a certain opposition and appositeness about the names which it is convenient to use in indicating two perfectly different fractures. But although the term extracapsular may be useful it is a misnomer, and if a misnomer, therefore, however convenient it may be to the surgeon, it cannot be recognised by the anatomist. I would suggest, with all deference, that the terms of "fractures near the head" and "fractures near the base of the neck" or "near the trochanters" be adopted, and for this purpose I would call in the aid of the Greek rather than the Latin language, and for the term "intracapsular" I would substitute "paracephalic" and for the misnomer of "extracapsular fracture" I would introduce the term "paratrochanteric."

# The Hunterian Lectures

ON

# THE PYGMY AND NEGRO RACES OF AFRICA.

*Delivered before the Royal College of Surgeons of England on March 2nd, 4th, and 6th, 1908,*

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## LECTURE III.[1]

*Delivered on March 6th.*

### THE STONE AGE.

MR. PRESIDENT AND GENTLEMEN,—The earliest traces of the presence of man in Africa, as elsewhere, are implements of rough or polished stone. The form of these implements bears a general resemblance to those found in Europe, though an exact classification into series based on form alone is as yet impossible. Many of them are found in the drifts of old river-beds which in the course of time have disappeared and their gravels, resisting denudation, are now often on the tops of hills.

Perhaps the clearest evidence of the antiquity of these gravels, and of the implements which they contain, is afforded by a study of the Batoka Gorge of the Zambesi. This was carefully investigated by Professor Lamplugh and others during the visit of the British Association for the Advancement of Science in 1905. Professor Lamplugh describes the Zambesi above the Falls as flowing in a broad shallow valley in the Central African plateau, being at this point nearly a mile in width. Immediately below the Falls the river is gathered into a narrow gorge about 150 yards wide, with nearly vertical walls of basalt 400 feet in height. This gorge, characterised by numerous abrupt changes in direction, extends for some 60 miles. The broad valley, however, continues as an open outer valley for some distance until it is finally broken up by the series of deep subsidiary gorges cut by each of the tributaries of the main stream.

The fluviatile deposits are scanty and are represented by a few feet of material. On the bottom of this valley the implements are found almost in equal numbers in the outer gorge below the Falls and on the margins of the old valley above the Falls not now covered by the river. The conditions of their occurrence suggest that the river flowed at a higher level than at present when the implements were deposited and that the upper part of the gorge has been since excavated, in which case they must be of considerable antiquity. The workmanship on the implements was always rough, though some specimens showed a secondary chipping, which corresponds more nearly to rough European neolithic work than to the early palæolithic type.

Henry Balfour found on the same plateau above the Falls an implement of a type similar to those of the river drift in Western Europe. It presented a rounded butt for holding in the hand, and the opposite end had been carefully flaked to produce a cutting edge. The same observer revisited the district in the summer of 1907 and found further implements of undoubted palæolithic type in the river gravels.

[1] Lectures I. and II. were published in THE LANCET of April 4th (p. 983) and 11th (p. 1050), 1908, respectively.

Implements varying in pattern from rudely chipped stones, usually known as eoliths the artificial character of which is still disputed, to typical palæoliths, recalling Mousterian and Solutrian forms, have been found all over the higher veldt in numerous districts of the Transvaal, Orange River Colony, Natal, and the Cape—some in rock shelters, others in river drift. From some rock shelters pygmy flints and chipped ostrich egg shells have also been obtained.

A similar series of implements has been found in the caves and kitchen middens along the sea coast. The floor of the caves in many cases has been formed into a kind of cement conglomerate from the dripping of water and the calcareous material derived from the shells in which implements and bones are embedded. This conglomerate is usually harder than the sandstone rocks out of which the caves have been hollowed, so that in some instances the floor has been preserved, although the cave itself has disappeared. The commonest implement is of chert quartzite, with a sharp point and two cutting edges. In several cases there were traces of a hearth, around which were split bones, implements, and flakes of quartzite which were probably used as axes and arrow heads. In no case could these flakes be chance chippings from the walls of the caves themselves which were in sandstone. In a few caves skeletons have been found, and on examination they proved to belong to that variety of the Bushman peoples previously described as Strandloopers. It may be noted that no whorl stones, so characteristic of the inland as opposed to the beach-ranging Bushman, have been found in the caves, though common enough on the hill terraces a little farther inland.

In the inland rock shelters similar implements, sets of perforated ostrich egg shell necklets, and rude pottery have been found associated with wall paintings of a type known to have been constructed by the Bushman in historic times. In some of the Knysna caves similar paintings on stone have been found with the remains of undoubted Strandloopers. It is thus clear that the later stone implements were constructed and used by the Bushman. Although there is no direct evidence, owing to the absence of human remains, that the earlier ones were produced by the same race, it can only be said that there is no evidence of any other variety of mankind having occupied South Africa. Stone implements of the river-drift type and others resembling the ruder forms of neolithic Europe have been found over wide areas in Somaliland by Seton Kerr and on the edges of the rift valley by Gregory. In Northern Africa, in the Sahara and the Nile valley, a succession of stone implements is found, the later Nile valley forms being associated with ample human remains.

The osteology of predynastic Egypt has been closely investigated by many observers, and it has been shown that at least two types of man were in existence, the one recalling the Mediterranean peoples and the other resembling the negroes. Arthur Thomson and Randall MacIver distinguish these as non-negroid and negroid types. It is interesting to note that in many features the negroid skulls resemble the Bushmen-Hottentots more closely than the negroes proper.

It seems reasonably established that for a long period of time Southern Africa was occupied by man in the nomadic hunting stage of culture and as there is no evidence of any type other than the Bushman these are generally regarded as the first inhabitants. To the question whence did they come it can only be answered that there is no evidence; no type exactly like them has been found elsewhere. They appear to have certainly occupied the country as far north as Lake Nyasa, and the cropping up here and there of individuals with a Bushman cast of countenance among the Bantu tribes of British Central Africa and German East Africa, as well as among the Andoroto of East African uplands, suggests the probability of a former north-eastern extension. No traits suggesting the Bushmen are now to be met in the Nile valley.

The earliest history shows the Bushman territory being invaded on the west by the pastoral Hottentots and on the east by the agricultural Bantu. The race movements seem always to have been south and westwards, a direction determined largely by the physical features of the country, though it must be remembered that the now desert regions were formerly better watered. The occupation of any site depends both on its suitability for human existence and on its adaptibility to the mode of life of the people thereon, whether pastoral, agricultural, or merely nomadic hunters.

From this standpoint it will be seen that the orographical and climatic features, and particularly the presence or absence of dangerous parasitic diseases, whether of animals or man, have had a great influence in shaping the main outlines of the history of Africa.

Africa is naturally divided into several zones. 1. A littoral strip along the Mediterranean, with a rainfall in winter and spring, with conditions somewhat resembling those of Southern Europe, modified by the proximity of the desert. This region from the earliest times has been the home of the Mediterranean race. 2. A desert zone. The Sahara in the north, a large part of which is absolutely waterless desert and the rest poor scrub-land, with vegetation limited to small plants arranged to avoid evaporation from the surface of their leaves—e.g., the gum acacia and tamarisks. These conditions are reproduced on a smaller scale along the coast from Loanda to the Cape and in the Kalahari desert. Both these areas have served as barriers to progress, though great trade routes are found along the chain of oases across the Sahara. 3. A great pastoral zone on the northern plateau in the Central Soudan, on which great herds of cattle and horses can be reared, and in which agriculture is practised to a greater or less extent. 4. Western Equatorial Africa, an area of great heat and humidity, occupied by dense forest. This area is, on the whole, unfavourable to animal life. 5. Eastern Equatorial Africa consists largely of elevated open forest and savannah, the home of great game, and affords good pasturage, where the various parasitic animal diseases permit, and is suitable for agriculture. The rainfall, however, diminishes, so that the pasture is somewhat less certain towards the south. The southern region is well adapted to agriculture when irrigation can be extensively practised, as has been done from mediæval times, e.g., in Rhodesia. The coastal strip on the south-west is desert; on the south-east it is very humid and hot and consists of marshes and forest.

The hygienic conditions of large parts of these areas may be summarised by saying that Equatorial Africa is the home of great groups of diseases due to animal parasites. In all the coastal marshes and all the areas of marsh and shallow lake arising from the expansion of the inland rivers, malaria is rife and almost all the parasites of men the alternative hosts of which live in or around shallow waters are to be found. Malarial disease no doubt affected the progress of man across the continent and led him as far as possible to keep to the healthier uplands—the avoidance of the Nile-Sobat valley by the Abyssinians being a case in point. Animal diseases have had an equal effect, more particularly the diseases due to trypanosomes and conveyed by flies of the genus glossina. Nagana or tsetse-fly disease is found along the eastern coastal zone from Zululand northwards to German East Africa. It extends up the Limpopo valley into the Northern Transvaal, affects the Lower Zambesi and Shire valley, extends along the eastern shores of Nyasa, into the basin of the Luapula, is common all round Lake Tanganyika, has been found at several points in the basin of the Congo, and thence northwards to the Camerun and the Benue, and up the Niger in the low-lying ground above Lokoja, though cattle can be kept in the dry season when the fly is scarce but must be driven away from the river in the wet season. Tsetse flies and nagana have been found along the banks of the Shari but are absent from the shores of Lake Chad. An allied disease spreads through Togo-land into Southern Guinea. The upper waters of the Kassai and Zambesi present the tsetse fly but no nagana. The areas thus marked out are avoided as far as possible by pastoral tribes and have presented formidable barriers to migration.

The outside influences of negro Africa have all come from the north and east. The one great line of communication from north to south—the Nile valley—was largely closed by the great marshes or hidden lakes choked up by great masses of floating vegetation, the sudd, from Fashoda to Lado. These checked the direct influence of the northern peoples from the Nile valley in the Great Lakes and diverted them westwards into the Central Soudan. The route from the Abyssinian Highlands past Lake Rudolf, however, remained open and seems to have been from very early times a line of racial pressure.

[Dr. Shrubsall proceeded to give an account of the domestic animals of the African tribes—the dog, the goat, cattle, and fowls. He continued:—]

The history of the negro tribes is to be derived from references made by travellers visiting their districts, supplemented by some evidence from linguistic and native tradition. Archæology affords little help over the greater part of the area as native building seem to have almost always been of a perishable nature. There are earlier records of the history of the Soudan than of any other part of negro Africa. The very earliest refer to the district between the Senegal and the Upper Niger, known in mediæval times as Ghana. It is said that white kings ruled over this district before the year of the Hegira (622 A.D.). The Arabs visiting this country in the eighth century found it ruled by a black monarch to whom the Berbers of the desert towns paid tribute. The Wolof who then inhabited it are described in the Tarikh es Sudan as the best of men. Between 900 and 1050 the supremacy of the black kingdom of Ghana was acknowledged by the towns on the Saharan border and oases inhabited by whites. The town of Ghana is described by El Bekri as "the resort of the learned, the rich, and the pious of all nations." The town at that time was divided into Mahomedan and pagan quarters. Magic and trial by ordeal were in use. Ten days to the south of Ghana was the country of the Lem-Lems, or cannibals on whom slave raids were constantly being made. By the middle of the eleventh century we learn from El Edrisi that the king and his chiefs of Ghana were Mahomedans. Of the country between the Niger and Lake Chad El Berri gives information that there was a great kingdom, extending for eight days' march, of which the kings bore the title Der; and beyond this came Kanem, a country of the idolaters. The first kingdom was doubtless Bornu.

By the fourteenth century the Berbers had pressed south and had formed a series of peoples at the southern edge of the desert from the Atlantic to the Nile but subject to the black kings of the Soudan. In the thirteenth century arose a great black kingdom of Melle in the Western Soudan, extending from the Atlantic to the Niger and northwards into the desert. The kings of this State accepted Mahomedanism and made pilgrimages to Mecca. This kingdom was visited by the distinguished traveller, Ibn Batuta, from whom we have a description. The rulers of this kingdom were received on equal terms by the rulers of the Northern Arab-Berber civilised States. Beyond Melle the Niger was said to enter a region of swamps and cannibals.

The Mellestine Empire was succeeded by the Songhay, which stretched from the Atlantic to Lake Chad and northwards across the more habitable parts of the desert almost to the borders of Egypt. This empire maintained a high state of civilisation and culture, and libraries were highly valued therein. In the sixteenth century this part of the Soudan was subdued by the Moorish kingdom, and although the military governors of the district became independent, the Soudan disappears from the knowledge of the Western European peoples. Between the peoples of this part of the Soudan, who from the earliest period of which we have records seem to have been of mixed blood, and the purer blooded negro to the south a gulf had always been fixed. In Haussa country several more or less powerful States had existed throughout this time the history of which is more or less known. They remained pagan longer than the more northern districts. The neighbouring State of Bornu also has an illustrious history and, if this is to be believed, adopted firearms long before Eastern Europe. The possession of these enabled this State to resist the Moors who had overthrown their neighbours of Songhay. The Hausa States were overthrown by the Fulah in the beginning of the nineteenth century and are said then to have been pagan.

The evidence of history, from Herodotus on, seems to show a gradual pressure of the negroid peoples driving the unmixed negro to the limits of the district inhabitable by the intermixing race.

The Fulah are a negroid rather than a negro people, very difficult at present to classify. Sir Frederick Lugard describes them as closely resembling the Bahima of Uganda. Although in history they are found to the west, and their invading march in the nineteenth century was from west to east, their traditions are that they came from the east, though most authorities regard it as more probable that they owe their origin to an incursion of Berber or Mediterranean peoples, the Northern Hamites, into the Senegal from across the Sahara.

The Eastern Soudan has so far as its history is known been the scene of raids from the Hamitic-Semitic tribes who occupied zeribas much as the Fulahs did walled towns in Hausaland, the people whom they ruled being liable at any time to be seized as slaves. None the less, many of the raiders were of native race. Protected by the marshes of

the Ghazal Nile and Sobat the negro in this area has remained isolated and unmixed for an indefinite period.

[Dr. Shrubsall proceeded to consider the early history of the people of the Great Lakes district, the Bantu peoples, and the Portuguese colonisation of Africa. He continued :—]

"At the end of the eighteenth century Dingiswayo commenced the consolidation by conquest of the coast tribes and Tshaka his general as head of the Zulu tribe built up a great military power which ravaged the whole coastal districts far inland. His attacks caused a section of the Kaffirs, the Amangwane, to invade the territory of the mountain tribes, who in turn advanced in a great horde, known after a woman Mahatatisi, who led them for a time as the Mantati. They spread across the Bechuana territory destroying all before them, sparing nothing that lived along the line of their progress. Defeated by the Griquas near Kuruman they retreated and divided into two groups, one under Moshesh forming the nucleus of the present Basuto people; the other under Sevituane fled to the north into Rhodesia and then to avoid the Matabele still further across the Zambesi to form a military force, known as the Makololo in Barotseland. Later these were exterminated but their language (Sesuto) remains and is now spoken by the Barotse. A few Makololo who were away at the time of the destruction founded a fresh aristocracy over some tribes on the Shire basin where the name but not the language is now to be found. This serves as an example of the value and dangers of language and names as historical guides unless all the facts are known. The present Barotse are no near relatives of the Basuto, yet speak the same tongue; the name Makololo on the Shire means neither similarity in race nor language. Other groups who had been subject to and incorporated in the Zulu armies broke away from time to time under their generals, sometimes to avoid the certain destruction awaiting them if they returned with the object for which they had been sent out unaccomplished. The best known were the Matabele who fled under Moselekatzi in 1820, settled first in the Transvaal, and then, pressed on both by the Boers and the Zulus under Durgaan, advanced north into Mashona territory. Other groups crossed the Zambesi and settled in the Nyasa territory as the Angoni, some of whom even penetrated into Unyamwezi and to the Victoria Nyanza, where they were known as the Watuta. These wars, which lasted over half a century, almost entirely mixed up the tribal organisations in South Africa and may be regarded as typical of events all over negro Africa. The main features in this brief retrospect of the history are a series of incursions from north to south, with occasional brief reflux waves leaving few lasting effects.

From the evidence of the crania we have seen that the type of the Eastern Bantu differs from that of the Western and so far as the few available specimens can show also from the Central. In the eastern group, consisting mainly of the coastal people, the higher type with longer nose and thinner lips constantly crops up and shows a marked similarity in features in all quarters. This would seem to show a certain admixture of a higher type. This type, from the studies in German East Africa, appears to be less frequent around Kilimanjaro and in North Nyasaland than to the south in Kaffraria and to the north in Unyoro. When it occurs it can often be traced to the Zulu reflux wave. If then a group of peoples of higher caste, the product of race mixture of negro and Hamite, had passed down from the Nyanza along the western side of Tanganyika, or at least close to its eastern side, and had crossed the Middle Zambesi, thence trending eastwards, it would agree well with the present distribution. If this type were supposed to be allied to the Hima it might be asked why are the cattle of the Kaffirs not of the long-horned type common in Ankole. It might be that this type bore the journey eastwards less well than the humped cattle, for in travelling to the east coast the invading tribes probably crossed the tsetse zone, and indeed from Dos Santos we know that tribes passing southwards actually did do so. Sir H. H. Johnston has long suggested such a route on linguistic grounds, as shown in the map in his work on British Central Africa. He points out that to some extent the most archaic Bantu tongues existing are still found along this main line of route—Kirega, Kiemba, Cibisa, Isizulu—though a primitive type of Bantu is found here and there to the side of this route, such as the Kimakonde on the east coast near the mouth of the Ruvama river, the Nkonde dialects of the north end of Lake Nyasa, and the Oci-Herrero of German West Africa. The languages of the east coast of Mozambique and German East Africa are in many ways peculiar and have evidently been for some time isolated and have not taken a direct part in modelling the southern speech.

From the western side of the continent we have rather less information, but it would seem that successive streams of Bantu folk from the Congo basin are gradually driving out all non-Bantu elements from even the coastal zone from the Congo to the Sabson.

In the north-east throughout the last century raids have been made by the Masai, a mixed people who have pressed aside the Bantu tribes from much of the higher pasture land between Mount Elgon and Kilimanjaro. The Masai themselves seem to have entered this district from the north and according to native tradition it is only some 50 years since a section of this race was driven from the west of Lake Rudolf by the Suk-Turkana. Farther to the east Galla tribes have from time to time made raids into negro territory and are themselves being raided and gradually displaced by the more warlike Somali, who are gradually extending their dominion down the east coast.

In the Soudan itself the less advanced and less mixed negro has been within recent historic times pushed back at least a degree in latitude into the more unhealthy, humid forest zone. The whole history of Africa is one of replacement of one racial stock by another more richly endowed. The Bushmen were driven to the uttermost ends of the continent to take refuge in mountain fastnesses in which they were safe until the advent of the European and long-range firearms against which their weak bows and arrows were powerless. At the same time the driving away of the great game and its replacement by herds of cattle converted him of necessity from a hunter of the wild animal free to all, to a hunter of those animals which had taken their place, and as these were the property of the usurpers of his country he was termed by them a robber to be exterminated. Even those who had fled into the half desert fastnesses of the Kalahari, as yet not used as grazing grounds, had to suffer a further ill from the advent of pastoral peoples. The cattle plague, which ruined many of the pastoral peoples, also destroyed the majority of the great game, and so has helped by starvation to exterminate the original race of South African man.

The Hottentots, driven back before the white man, make a precarious living in Namaqualand and seem fated to suffer the end they meted out to their predecessors. A few tribes, now all of mixed blood, remain along the Orange River in Griqualand and may by miscegenation attain the right to survive.

The unmixed negro is now nearly everywhere driven into the humid, unhealthy forest zone and river marshes and has been protected therein by acquiring a certain tolerance of some parasitic diseases which take heavy toll of invading higher races. In these fastnesses the negro remains unprogressive, if not retrograde. Now with the aid of hygienic precautions, the drainage of marshes, the opening up of clearings in the forest, the parasites which have been his protection—or perhaps rather the insects transmitting them to man—are being destroyed, and the higher races are able to live longer and longer periods in the old forbidden land. As these changes progress the lower negro tribes unless they respond to the new condition are doomed to disappear and be replaced by mixed peoples. This is doubtless all for the good. We have seen that in early mediæval times a high state of culture existed among the mixed peoples in the Central Soudan and it may be that the results of a similar mixture throughout black Africa will lead to the rise of a more progressive people who will be brought into even closer contact with European civilisation when by steamers and railroads the healthy plateaux are made accessible and become the seats of the newer empire in which each race may play its part.

In conclusion I desire to thank the Council of the College for the honour which they have conferred upon me in appointing me to deliver these lectures.

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THE annual general meeting of the University College Hospital Ladies' Association will be held on Wednesday, May 6th, at University College Hospital, Gower-street, London, W.C., at 4.30 P.M. The Duchess of Bedford will occupy the chair.

# OBSERVATIONS ON BLOOD PRESSURE, CHLORINE RETENTION AND DE-CHLORINATION, HYPERACIDITY, AND VARIATIONS IN THE STARCH RATION.

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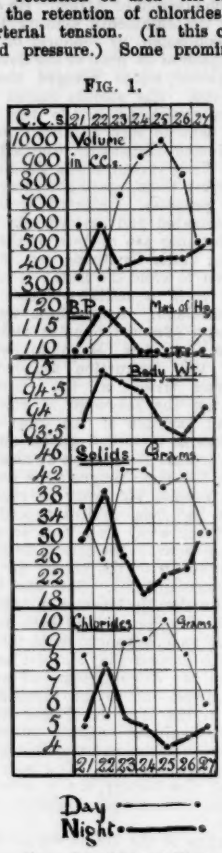
THE following observations have been made during the past five years mainly with the object of ascertaining the factors producing variations in the starch ration, or, in other words, the influences determining the quantity and quality of the starch metabolised by the body. It was found necessary to make observations twice a day so as to differentiate between variations due to work and rest. The importance of the faculty of using starch as fuel in the case of protoplasm in general is thus stated by Loeb: "We know that the peculiar phenomena of oxidation in living matter are determined by fermentative processes, and we venture to say that fermentations form the basis of life phenomena. It has been demonstrated that fermentation is a function of the geometrical configuration of the molecule. ..... The influence of the geometrical configuration goes further. Voit has suggested, and Cremer has demonstrated, that there is a far-reaching parallelism between fermentability and the assimilation of carbohydrates."[1]

The conditions that have been somewhat unexpectedly under observation have been hyperchlorhydria with as low a starch ration as 50 grammes; hyperacidity; hypoacidity; chlorine retention, with both forced and spontaneous de-chlorination; the substitution of a normal blood pressure of 100 millimetres of mercury for one of hypertension of probably 20 years' standing after passing through a phase of hypotension, purpura, and rheumatism associated with calcium and probably magnesium "stasis."

It would appear to be probable that these conditions are fundamentally due to an alteration of the molecular constitution of the protoplasm that has the effect of disturbing the balance between the aerobic and anaerobic functions of the cells. This conception of animal protoplasm is that of Gautier found in his essay on "La Chimie de la Cellule Vivante," where he sustains the thesis "that the animal cell, far from living entirely an aerobic life, has within the protoplasmic substance anaerobic functions." Further, he maintains that the aerobic processes are required in order to oxidise and render harmless the products of the primitive anaerobic changes. The main anti-aerobic influences to which human protoplasm is exposed are the following. 1. Cold. The protective vaso-constriction found in response to the stimulus of cold not only prevents the loss of heat but must necessarily interfere with the nutrition of the skin and its supply of oxygen. It is suggested that it is in consequence of this interference with the vitality of the cuticular protoplasm that there results the formation of toxic katabolites which affect the general mass of protoplasm in proportion to the area of skin exposed to the cold. 2. Mental and physical fatigue. 3. The introduction of anaerobic toxins from the growth of micro-organisms within the body or from the intestinal canal. The typical reaction is illustrated in Fig. 1 in its simplest terms. It was caused by an unaccustomed mountain climb on the 22nd. A hearty meal was taken at midday but no food afterwards as there was an absence of appetite. A good description of this general reaction to fatigue is found in a paper by Dr. Mahomed describing the condition of Weston the famous pedestrian.[2] "He became sleepy, his pulse tension was now considerably increased, there was a coincident fall of temperature. His hands felt cold instead of glowing as heretofore, he complained of feeling chilly and required more bedclothes. The second sound of his heart was accentuated and the first a little prolonged (March 10th and 11th). On March 12th his temperature went up, his pulse tension became low, and his extremities warm. After this he was able to walk easily and well till the end of the match." The reaction consists essentially: (1) in the retention of water shown by coincident variations of the urinary volume and the body weight; (2) in the retention of solids (Zuntz, Krumacher, Argutinski, and others[3] have shown that there is what is called "retention of urea" till the day following fatigue); (3) in the retention of chlorides; and (4) in the variations in arterial tension. (In this case there was a descending blood pressure.) Some prominent features of

FIG. 1.




General reaction to fatigue.

variations in hydration, the retention of chlorides and de-chlorination, variations in arterial tension, hypoacidity, the metabolic traffic in calcium and magnesium, with some generalities on variations in the starch ration will be successively dealt with.

### *Variations in Hydration.*

It is well known that variations in hydration play an important part in protoplasmic reactions, increased hydration indicating increased activity. Thus Loeb[4] found that "injured (poisoned) muscle is able to take up water from so concentrated a solution as 2·8 per cent. NaCl, thus exercising an osmotic pressure equal to four or five atmospheres." The increase in osmotic pressure in active muscle, or rather the increase in the amount of water absorbed, has been proved not only by Ranke but also by Miss Cooke.[5] Hirschfeld[6] showed during losses in weight that at first there is a certain degree of dehydration and that the body becomes rehydrated little by little as the weight is regained. This is true of the thin as well as the obese. Dehydration has also been observed in reduction cures in the obese by Dapper, Karchagin, Rodenko, and Javal. Having been in the habit of taking my weight morning and evening for some years I have frequently noted rises in weight from cold, fatigue, and intestinal intoxication. These variations were produced with comparatively small causes when I was in a state of chronic inanition.

[1] Loeb: Collected Papers, p. 498.
[2] Brit. Med. Jour., March, 1876.
[3] Von Noorden: Metabolism, vol. i., p. 353.
[4] Loeb: Op. cit., p. 469.
[5] Loeb: Op. cit., p. 450.
[6] Hirschfeld: Die Behandlung der Fettleibigkeit, Zeitschrift für Klinische Medicin, vol. xxii., p. 142.

*Chlorine Retention and Dechlorination.*

Bunge found that "it appears to be the universal rule that those who live entirely on animal food either have never heard of salt, or if they possess it avoid it, whereas the people whose staple food is vegetable have the greatest desire for it or regard it as indispensable." The reason suggested is that potassium has the effect of driving chloride of sodium from the tissues. The theory, however, which is gaining ground is that chlorine retention only occurs when the osmotic equilibrium has been disturbed in consequence of an increased elimination of $P_2O_5$, or from a deficient ration of phosphorus. These views are held by Maurel, Limbeck, Schwarz, and others. So that Bunge's facts can be explained by stating that where there is an abundance of phosphorus in the dietary *ceteris paribus* chloride of sodium is not required.

In February, 1905, Dr. Slosse of Brussels was kind enough to make a balance of my ingesta and egesta. A loss of 58 grammes of chlorides occurred in a week. Since the spring of 1906 I have made what must be necessarily a rough balance of the chlorides ingested and of those eliminated in the urine. My bread has been specially prepared without salt; no salt was added to my food in the processes of cooking; the salt used was added afterwards from a glass-stoppered bottle filled with carefully dried salt. With this exception my diet has been one that would be recommended by Achard or Widal and Javal[7] as a dechlorinating diet, estimated to

TABLE I.—*Chloride Balance.—Description under Chlorine Retention and Dechlorination.*

| No. | *From 1906 to 1908.* Date. | Amount eliminated. | Chloride of sodium added. | Estimated error. | Amount retained. | Dechlorination. | Day vol. Chlorides. | Night vol. Chlorides. | Balance. |
|---|---|---|---|---|---|---|---|---|---|
| 4 | May 15th to May 24th. | 138·03 | 11·0 | 33·0 | — | 94·03 | 55 | 67 | 147 grammes eliminated. |
| 5 | ,, 24th ,, June 2nd. | 93·37 | 10·0 | 24·5 | — | 53·67 | 68 | 69 | |
| 6 | July 13th to July 25th. | 85·94 | 62·68 | 39·6 | 16·34 | — | 77 | 81 | 1·81 grammes eliminated. |
| 7 | ,, 26th ,, August 3rd. | 68·13 | 52·4 | 33 0 | 17·27 | — | 81 | 82 | |
| 8 | August 4th ,, ,, 13th. | 97·07 | 52·4 | 33·0 | — | 11·67 | 91 | 100 | |
| 9 | ,, 14th ,, ,, 23rd. | 91·57 | 47·16 | 30·7 | — | 13·71 | 70 | 73 | |
| 10 | ,, 24th ,, Sept. 2nd. | 92·63 | 52·4 | 33·0 | — | 7 23 | 75 | 102 | |
| 11 | Sept. 3rd ,, ,, 12th. | 87·21 | 52·4 | 33·0 | — | 1·81 | 90 | 110 | |
| 12 | Sept. 13th to Sept. 27th. | 108·77 | 34·0 | 33·0 | — | 41·77 | 87 | 99 | 350·69 grammes eliminated. |
| 13 | ,, 28th ,, Oct. 8th. | 128·93 | 37·4 | 36·3 | — | 55·23 | 57 | 100 | |
| 14 | Oct. 9th ,, ,, 20th. | 174·34 | 49·12 | 39·6 | — | 85·62 | 59 | 71 | |
| 15 | ,, 21st ,, ,, 30th. | 140·65 | 41·0 | 33·0 | — | 66·65 | 75 | 85 | |
| 16 | ,, 31st ,, Nov. 11th. | 143 28 | 49·2 | 39·6 | — | 54 88 | 78 | 90 | |
| 17 | Nov. 13th ,, ,, 23rd. | 135·34 | 49·2 | 39·6 | — | 46·54 | 70 | 80 | |
| 18 | Nov. 24th to Dec. 4th. | 150·6 | 130·9 | 36·3 | 16·6 | — | 65 | 70 | 60 48 grammes eliminated. |
| 19 | Dec. 14th ,, ,, 23rd. | 169·34 | 119·0 | 33·0 | — | 17·34 | 56 | 73 | |
| 20 | ,, 24th ,, Jan. 2nd. | 183·63 | 110·0 | 33·0 | — | 40·63 | 60 | 81 | |
| 21 | Jan. 3rd ,, ,, 12th. | 149·61 | 125 0 | 33·0 | 8·39 | — | 72 | 82 | |
| 22 | ,, 13th ,, ,, 22nd. | 116·88 | 65·0 | 33·0 | — | 18·88 | 89 | 100 | |
| 23 | ,, 23rd ,, Feb. 1st. | 183·6 | 95·0 | 33·0 | 14·76 | — | 70 | 80 | |
| 24 | Feb. 2nd ,, ,, 11th. | 116·48 | 70·0 | 33·0 | — | 23·38 | 61 | 61 | |
| 25-30 | Feb. 12th to April 14th. | 977 5 | 705·9 | 198·0 | — | 74·6 | 59 | 67 | 74 6 grammes eliminated. |
| 31 | April 15th to April 24th. | 131·7 | 103·0 | 33·0 | 4·3 | — | 60 | 73 | 0·7 gramme eliminated. |
| 32 | ,, 25th ,, May 4th. | 149·7 | 101·0 | 33·0 | 14·7 | — | 63 | 81 | |
| 33 | May 5th ,, ,, 14th. | 153·2 | 109·0 | 33·0 | — | 11·2 | 63 | 72 | |
| 34 | ,, 15th ,, ,, 27th. | 102·0 | 70·0 | 33·0 | — | 1·0 | 97 | 127 | |
| 35 | ,, 28th ,, June 6th. | 136·2 | 104·0 | 33·0 | — | 0·8 | 93 | 97 | |
| 36 | June 7th ,, ,, 16th. | 170·9 | 140·0 | 33·0 | — | 3·1 | 97 | 99 | |
| 37 | ,, 17th ,, ,, 26th. | 131·1 | 105·0 | 33·0 | 7·9 | — | 90 | 100 | |
| 38 | ,, 27th ,, July 6th. | 149·5 | 138 0 | 33·0 | — | 11·5 | 94 | 94 | |
| 39 | August 11th to August 20th. | 121·9 | 75 0 | 33·0 | — | 13·9 | 91 | 99 | 85 8 grammes eliminated. |
| 40 | ,, 21st ,, ,, 30th. | 144·3 | 100·0 | 33·0 | — | 11·3 | 76 | 92 | |
| 41 | ,, 31st ,, Sept. 9th. | 160·5 | 125·0 | 33·0 | — | 2 5 | 87 | 101 | |
| 42 | Sept. 10th ,, ,, 19th. | 142·7 | 80·0 | 33·0 | — | 29·7 | 64 | 86 | |
| 43 | ,, 20th ,, ,, 29th. | 143·5 | 100·0 | 33·0 | — | 10·5 | 78 | 85 | |
| 44 | ,, 30th ,, Oct. 9th. | 126·9 | 76·0 | 33·0 | — | 17·9 | 75 | 90 | |
| 45 | Nov. 4th to Nov. 13th. | 192·0 | 86·0 | 33·0 | — | 68·0 | 60 | 84 | 199 4 grammes eliminated. |
| 46 | ,, 29th ,, Dec. 8th. | 194·9 | 113·0 | 33·0 | — | 48·0 | 55 | 82 | |
| 47 | Dec. 9th ,, ,, 18th. | 195·5 | 129·0 | 33·0 | — | 33·5 | 59 | 79 | |
| 48 | ,, 19th ,, ,, 29th. | 179·0 | 115·0 | 33·0 | — | 31·0 | 61 | 80 | |
| 49 | ,, 30th ,, Jan. 8th. | 159·0 | 110·0 | 33·0 | — | 16·0 | 70 | 76 | |
| 50 | Jan. 9th ,, ,, 18th. | 135·9 | 100·0 | 33·0 | — | 2 9 | 78 | 104 | |
| 51 | ,, 19th ,, ,, 30th. | — | — | — | — | — | — | — | |

[7] Widal and Javal: La Cure de Dechlorination, p. 16.

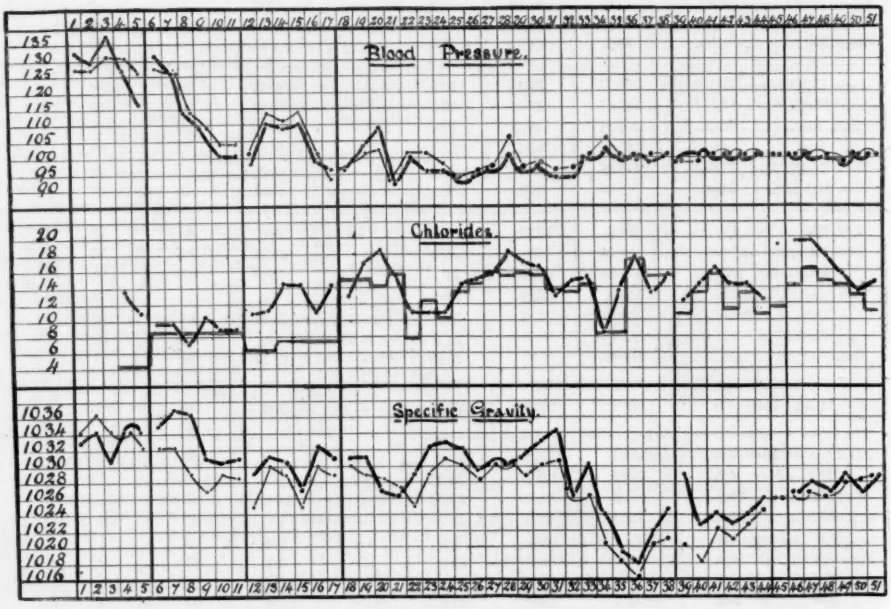
contain from two to three grammes of chlorides. It would appear that the chlorides lost by the bowel are practically negligible; Rohrich and Wik[8] found that, with the exception of the diarrhœa of Bright's disease, the fæcal chlorides never attain to more than 2 per cent. of those ingested. Achard and Ch. Laubry[9] found chlorine retention in at least 50 different acute and chronic diseases. Gaucher[10] found that in skin diseases "there is a high elimination as the case improves, and, on the contrary, the lowest amounts are found at the onset of the eruption, or else in chronic cases where there is a recrudescence of the condition." Marie stated that a healthy individual on a diet containing an excess of chlorides accumulated 92 grammes in 12 days and that 15 litres of fluid were necessary to dissolve it out of the tissues.[11]

*The Brussels Analyses, February, 1905.*—The average volume was 536 cubic centimetres, the specific gravity was 1031, the average chlorides were 10·09 grammes, the salts ingested were 7·63 grammes per diem, of which 3·42 grammes were found in the fæces; 71·919 grammes of chlorides were eliminated as well as 17·617 grammes of phosphates and sulphates. If it be assumed that the proportion of chlorides to the other salts was the same in the case of the ingesta as well as the egesta 13·58 grammes of chloride of sodium were ingested, constituting a loss of 58·3 grammes. The small salt ration was due to the fact that to facilitate analysis I cooked my own food in the laboratory and had omitted to provide myself with sufficient salt. There was also a daily loss of 4 4 grammes of nitrogen. At this time and for the previous two years I was suffering from the effects of hazardous and ill-considered experiments with a low proteid ration. As will be seen below there is every probability that I had reduced my tissue of phosphorus to dangerously low limits and that there was in consequence considerable retention of chlorine.

1. *From May 15th to June 2nd, 1906.*—There was a forced dechlorination due to a low chlorine ration. It occurred during a period of increased work. During the three weeks subsequent to June 2nd I was exposed to considerable fatigue. Thus on June 2nd, a typical day, the day volume and chlorides were 300 cubic centimetres and 3 grammes and the night 370 cubic centimetres and 5·6 grammes; there was also a rise in weight of 700 grammes, a condition clearly corresponding to that illustrated in Fig. 1. At the end of the three weeks there was a rise in weight of six kilogrammes and a rise in the blood pressure of from 120 to 140 millimetres of mercury. My experiences on this occasion and at Brussels left me with a resolution not to treat cases of parenchymatous retention by artificial dechlorination; I would far rather give copious dilute saline solutions early in the morning as would be done at Homburg with the Elizabethbrunnen.

2. *From July 13th to Sept. 12th, 1906.*—This period was clearly one of either retention or equilibrium. I have assumed that it was equilibrium and that the difference between the ingested and eliminated chlorides represented the daily error of the unestimated chlorides. It is probable that this amount is not sufficient at any rate for 1907, when there was an increased ration.

FIG. 2.




Variations in blood pressure, the balance of chlorides and variations in the urinary specific gravity. Each point represents an average of ten observations.

3. *From Sept. 13th to Nov. 23rd, 1906.*—There was clearly a considerable loss of chlorides; whether it actually reached the total of 350 grammes may be open to doubt, though I am unable to account for any considerable error. The most significant feature of this period was a sudden and decided preference for eggs, meat, and milk. At this time I was not aware of the alleged relationship of phosphorus and chlorine, so the occurrence was decidedly puzzling me. In the course of a day or two, literally, there was a change from having little or no breakfast to having three or four eggs with a large quantity of milk and coffee; eggs, too, had previously caused "biliousness" and were avoided, and throughout the summer, as a rule, there had been an aversion to take even a small ration of meat every day.

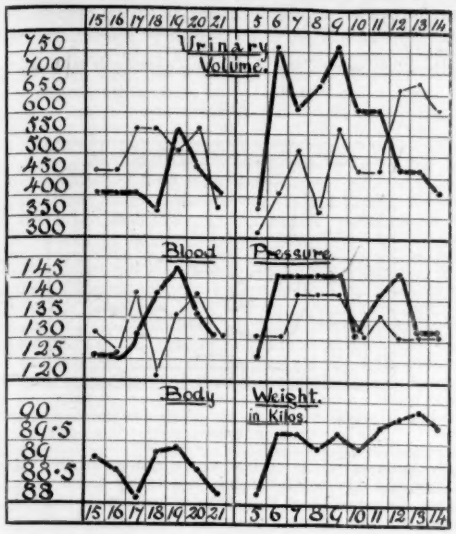
4. *From Nov. 24th, 1906, to Feb. 11th, 1907.*—There were fatigue and retention from Dec. 4th to 14th. During the period covered by Nos. 19 and 20 it will be seen that there was an elimination of 57 grammes. Till the end of the summer of 1907 there was a continual ebb and flow of retention and dechlorination, retention always occurring in response to fatigue, cold, &c., and elimination when there was rest. Before dealing with the circumstances that resulted in a further retention and a subsequent dechlorination, I will briefly enumerate some observations made on blood pressure.

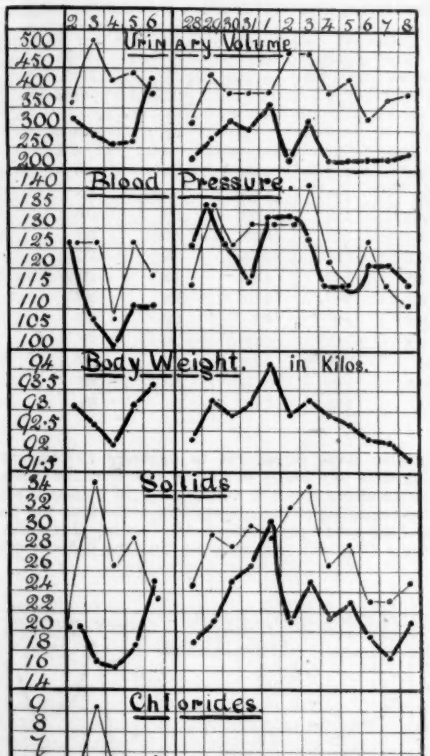
[8] Rohrich and Wik: Revue Médicale de la Suisse Romande, June, 1901.

[9] Achard and Ch. Laubry: Société Médicale des Hôpitaux, June 2nd, 1901.

[10] Gaucher and Desmoulins: Journal de Physiologie et de Pathologie Générale, July, 1904.

[11] Marie, cited by Von Noorden: Metabolism, p. 491.




FIGS. 3 AND 4.—Showing the coincident variations of the urinary volume, solids and chlorides with those of blood pressure.

*Variations in Arterial Tension.*

With the exception of intervals recorded above I have taken my blood pressure by means of the Riva-Rocci apparatus with a large band twice a day since April, 1905. The times chosen were about a quarter of an hour after going to bed and just before rising. In this way it was possible to have the advantage of differentiating between the effects of work and rest, and in addition the observations were capable of being compared over long periods of time. During this time I had the opportunity of observing the change from chronic hypertension to hypotension and subsequently to a normal blood pressure of 100 millimetres of mercury.

The facts observed are most easily explained by the hypothesis that the main factor in the production of variations in arterial tension is changes in the state of matter of the general mass of protoplasm. There is a considerable literature dealing with evidence of general protoplasmic changes. Thus, Dr. A. Haig in his book on uric acid has quoted a number of authors who have described variations in what he calls the "morning" and "evening" state. For instance, Richet, G. Oliver, Marey, Lloyd Jones, Roberts, and others have described well-defined variations in temperature, blood pressure, venous and capillary circulation, the urine, the respiratory interchange and in the specific gravity, the corpuscles, and the hæmoglobin content of the blood. The prominent features of these states can be said to be the common characteristics of certain groups of disease. For instance, in the case of Bouchard's illuminating generalisation in which he distinguishes between the state characterised by active tuberculosis as being associated with free hypotensive circulation, hyperazoturia, and demineralisation. After rest and superalimentation this same case will present the signs of hypertension, chlorine retention, &c.; in short, all the symptoms of retarded nutrition. The prominent features of this retarded nutrition characterise most of the chronic diseases such as obesity, arterio-sclerosis, renal disease, &c. Are these conditions associated with persistent protoplasmic superhydration in the case of retarded nutrition and in that of accelerated nutrition with a state of matter where there is either inherent inability of the protoplasm to react by increased activity and superhydration either from want of vitality or from excessive toxæmia?

The observations recorded in Figs. 3 and 4 were made while there was a descending blood pressure. It will be seen that in these circumstances there are clear indications of associated variations in the blood pressure, body weight, urinary volume, solids, and chlorides. Very little attention has been paid to the forces exerted by the protoplasm itself through the lymph on the capillaries and the blood pressure generally. Yet the extent and forcefulness of the protoplasmic reactions are thus stated by Loeb: "The theory of osmotic pressure indicates that the osmotic pressure in the cells is 20 times as high as the blood pressure."[12] Also that injured muscle is able to take up water from so concentrated a solution as 2·8 per cent. of chloride of sodium, a fact that is of importance in the explanation of œdema.[13] Again, he states that: "Injuries (poisons) lead according to their nature to a swelling of the cells or to a secretion of fluid into the body cavities."[14] Another important observation is that of Hess who was working with healthy animals and found that when the blood pressure was artificially varied the arterial pressure steadily maintained its composition; the venous pressure, on the other hand, became more concentrated when the pressure rose, more diluted (as much as 25 per cent.) when it fell.[15] If toxins are capable of producing such powerful reactions as those described it is only reasonable to suppose that provided the reaction be sufficiently extensive in its operation the state of matter must necessarily exert considerable, if not a preponderating, influence on such general conditions as hyper- or hypo-tension.

Ambard and Beaujard[16] pointed out that hypertension is intimately associated with chlorine retention. Thus, in Bright's disease they were able to provoke variations in blood pressure with dechlorination. In one case a dechlorination of 46 grammes caused a fall in the blood pressure of from 220 millimetres to 130 and when 38 grammes were retained the pressure rose to 160 millimetres. Also in tuberculosis they found that when chlorides were retained the

[12] Loeb: Op. cit., p. 499.
[13] Op. cit., p. 468.
[14] Op. cit., p. 471.
[15] Von Noorden: Op. cit., vol. i., p. 83.
[16] Ambard and Beaujard: Société de Biologie, Feb. 20th, 1904, p. 371.

pressure rose. Digitalis caused dechlorination and a fall in blood pressure.

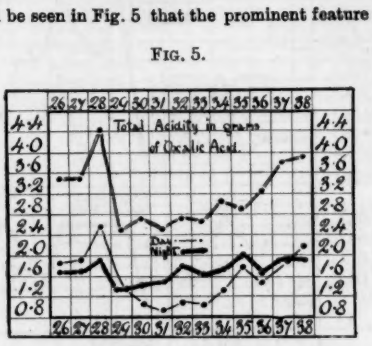
The observations recorded in Fig. 2 show the association between variations in blood pressure, the specific gravity of the urine, and the retention and elimination of chlorides. 1. The periods from No. 1 to No. 5 are best divided into those before the artificial dechlorination (Nos. 1, 2, and 3), and No. 4 during the dechlorination, when there was a fall in pressure of from 145 to 115 millimetres. 2. From No. 6 to No. 11 from June 2nd to July 13th, when no observations were made, fatigue, &c., caused a rise in pressure to 140 millimetres. The general changes, the prominent objective indication of which was a fall in the blood pressure, were associated with an adaptation to an extremely hot Italian summer. There were considerable weakness and slackness, especially during the first month. A very prominent feature was a remarkably copious secretion from the respiratory passages mainly in the night time; there were also frequent hay fever attacks. During the first fortnight there was a profuse elimination of unpleasant aromatic products by the sweat glands necessitating baths several times a day. There was also a persistent pigmented secretion from the axillæ. At the end of the second week the elimination from the respiratory passages ceased to be prominent and the sweat altered to an odourless, acrid material. By the end of August the sweat became feebly acid. Professor Riva-Rocci tells me that he has seen similar patients who have stayed in bed weeks and even months while the blood pressure was slowly falling. It will be noted that though there was a considerable retention of chlorides there was a low blood pressure during Nos. 9, 10, and 11, and again before the dechlorination in 1907. 3. During periods Nos. 12 to 17 the rise in blood pressure appears to bear some relation to the dechlorination. The rise during Nos. 19 and 20 again appears to be associated with dechlorination. An interesting point will be noticed that during Nos. 1, 2, 3, 19, and 20 the habitual relationship between the day and night readings for blood pressure and urinary specific gravity was altered.

*Hypoacidity and Hypotension.*

During the second fortnight in April, 1907, at the same time as an English medical man living 20 miles from Varese and a number of inhabitants of the town, I complained of occasional attacks of sensations of intense fatigue with the most decided mental and physical ergophobia. There did not appear to be any rise of temperature recorded in any of the cases. The common feature was a wish to stay in bed or to lie down as much as possible. During May I was less fortunate than my friend, as I was obliged to work and to do some travelling. The consequence was that the sudden attacks of fatigue became more frequent and occasionally alarming. There were both flying and fixed rheumatic pains of a severe sharp "whipping" type that I had hitherto not experienced, though I had been subject to rheumatism for some 20 years. There were also successive crops of petechiæ and large purpuric patches on the trunk and the extremities. I took aspirin regularly without any apparent benefit. The condition became so troublesome that I was obliged to stay in bed. Professor Riva-Rocci was kind enough to see me; he quieted my apprehensions as to the purpura which appears to be of common occurrence in this part of the country.

It will be seen in Fig. 5 that the prominent feature of the daily analyses of the urine was a change in the urinary acidity, the day acidity being habitually lower than the night. The reality of this state of urinary hypoacidity is shown by the annexed analyses (Table II.) made on six successive days subsequent to exposure to cold and to taking some bad food. It will be seen that the increase in ammonia shows that it is associated with increased acidity. In the beginning of June it was noticeable that the proportion of the earthy phosphates to the alkaline phosphates was falling. (Fig. 6.) At the same time the purpura and the rheumatism were worse. I was fortunate enough to find that by taking from 40 to 60 minims of acid. phosp. dil.

FIG. 5.

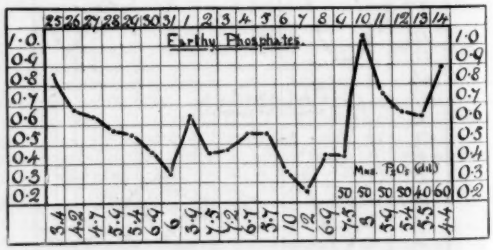



Low urinary acidity during the day time in the "hypoacid" state.

TABLE II.—*Analyses Illustrating Urinary Hypoacidity.*

| Date. | Volume. | Specific gravity. | Chlorides. | Urea-N. | $NH_3$. | $P_2O_5$. | Earthy phosphates. | Acidity, grammes oxalic acid. | Uric acid. | Cubic centimetres $\frac{N}{10}$ acid | Cubic centimetres $\frac{N}{10}$ $P_2O_5$. | Cubic centimetres $\frac{N}{10}$ organic acid. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 630 | 1029 | 10·71 | 5·55 | 0·599 | 1·38 | 0·472 | 2·77 | 0·881 | 439 | 194 | 235 |
| | 450 | 1025 | 4·86 | 4·2 | 0·489 | 1·17 | 0·27 | 1·44 | 0·636 | 228 | 174 | 44 |
| 24 | 810 | 1027 | 13·44 | 6·94 | 0·651 | 1·69 | 0·668 | 1·21 | 0·506 | 192 | 238 | — |
| | 370 | 1028 | 3·77 | 3·29 | 0·472 | 1·33 | 0·351 | 1·77 | 0·287 | 280 | 187 | 93 |
| 25 | 890 | 1022 | 11·48 | 5·18 | 0·665 | 1·33 | 0·333 | 0·58 | 0·492 | 92 | 187 | — |
| | 720 | 1018 | 5·18 | 4·98 | 0·779 | 1·15 | 0·396 | 1·44 | 0·26 | 228 | 161 | 67 |
| 26 | 865 | 1026 | 12·28 | 6·36 | 0·823 | 1·9 | 0·713 | 0·69 | 0·504 | 109 | 267 | — |
| | 500 | 1025 | 6·0 | 4·26 | 0·527 | 1·3 | 0·387 | 0·8 | 0·3 | 126 | 183 | — |
| 27 | 1260 | 1020 | 17·64 | 7·56 | 1·33 | 2·01 | 0·545 | 0·62 | 0·896 | 99 | 283 | — |
| | 1000 | 1015 | 8·4 | 5·56 | 0·748 | 1·3 | 0·55 | 1·4 | 0·275 | 222 | 197 | 25 |
| 28 | 640 | 1026 | 9·98 | 4·92 | 0·587 | 1·66 | 0·608 | 1·6 | 0·436 | 252 | 233 | 19 |
| | 480 | 1030 | 6·14 | 4·75 | 0·473 | 1·29 | 0·48 | 1·82 | 0·425 | 288 | 181 | 107 |

FIG. 6.

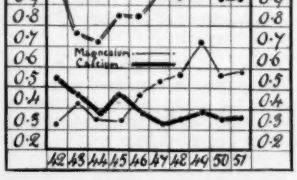



Fall in the amount and relative proportion of the earthy phosphates. The proportion of earthy to alkaline phosphates is shown in the lowest line of figures.

(B.P.) the symptoms were removed in two or three days. I took the acid throughout the summer in from 40 to 120 minims during the day when the symptoms of fatigue or the pains were present. The best guide for the strength and frequency of the doses is to use habitually the same wine-glass or small tumbler for diluting the acid and then to depend entirely on the taste for the strength of the dose. If there is a sharp, unpleasant, metallic acrid taste it is advisable to take less or none; if, on the other hand, it tastes pleasantly acid, as far as my experience goes it can be taken with confidence and impunity. It is stated on apparently good authority that quite large doses—as much, for instance, as 20 cubic centimetres—of the French officinal acid are taken habitually by M. Joulie, whom we are to thank for having originated this treatment. An Italian colleague was able to cause the disappearance of the pain in a case of obstinate rheumatism of some years' standing in a few days; the same result was obtained with another case of some weeks' duration. In a case of bad attacks of troublesome tumultuous action of the heart with marked irregularity of force and rhythm and true intermission when there had been no sleep till early in the morning the administration of 40 minims of the dilute acid caused the intermission to cease and the pulse to become quite regular (while I was feeling it) in ten minutes at the most. In 15 minutes the patient, who was tired and exhausted, fell asleep.

The influence produced by phosphoric acid on oxidation was shown by C. Lehmann,[17] who noted that after injecting phosphoric acid there was an increase in the respiratory exchange. A probable explanation of its immediate action is found in the fact that "the addition of a slight amount of acid to an $\frac{n}{8}$ NaCl solution shortens the latent period for the beginning of the rhythmical contractions. We shall see later that the acid acts, possibly like the above salts, by liberating calcium from certain organic combinations in the muscle or nerve."[18] Also, "the quotient of the concentration of the Na-ions over the Ca-ions becomes therefore of importance for phenomena of irritability. We shall see that magnesium acts very much like calcium in this respect."[19] It is also worthy of note that acids, especially lactic acid, greatly accelerate autolysis, whereas alkalies, especially ammonia, retard the process.[20] My impression after using phosphoric acid is that it does little to remove the causes but that it undoubtedly exercises a most potent influence in the immediate relief of the sensation of weakness and pain.

FIG. 7.




Showing variations in the proportions of magnesium and calcium phosphate before and after the administration of magnesium oxide. The fall in 51 is due to a lower intake of magnesium oxide.

*The Dechlorination in 1907.*

No analyses were made for 39 days during October and November. It is practically certain that owing to considerable fatigue, unsuitable food, and exposure to cold the circumstances were those where on previous occasions there had invariably been retention. If the subsequent dechlorination had even been suspected I should have at least have ascertained the chlorides in the night urine. I have therefore estimated that the loss was 197 grammes. There was a repetition of the appetite for eggs, meat, and milk. As it would appear that the mechanism of chlorine retention is closely associated with either a failure to fix phosphorus in the tissues or in consequence of an insufficient diet, it was interesting and suggestive to find that the only persistent feature of my daily analyses was a conspicuous deficiency in the proportion of the earthy to the alkaline phosphates. In addition, there was a deficiency in the amount of magnesium as compared with calcium. On Dec. 10th I commenced taking one or two grammes of calcium carbonate and magnesium oxide. It will be seen in Fig. 7 that it was coincident with an alteration not only in the quantity of earthy phosphates but also in the relative proportions of calcium and magnesium. The normal proportion of earthy to the alkaline phosphates is from 1 to 2 or 2·5, about 0·3 gramme of MgO and from 0·15 to 0·5 gramme of CaO.[21] In my case there appears to be a defect in the metabolic traffic of the urinary magnesium. If this can be remedied and phosphorus caused to be retained it would be an interesting and important fact for application in the treatment of patients in whom there is defective oxidising power. At any rate, up to the present time there does not appear to be any tendency to the ebb and flow of chlorine that was a prominent feature of my metabolism last year subsequently to the dechlorination of 1906. I may add that I have tested my urine on many occasions for albumin but I have not found even a trace once. On one occasion there was a doubtful trace of sugar when there was an unusual amount of ammonia present.

I have found in several cases besides my own that the urinary calcium is roughly divided into two parts, that precipitated by ammonia as calcium phosphate and that found in the filtrate. The filtrate only contains traces of magnesium. I hope to be able to show that the Joulie test for acidity with sucrate of calcium really varies with the calcium that is not precipitated by ammonia, and that it is due to this fact that the variations are found after the administration of phosphoric acid.

*Variations in the Day-night Urinary Quotients.*

In that most difficult of arts, the daily adjustment of a diseased individual with his environment, it is most useful to have a measurement which shows whether work is carried on beyond the fatigue point. I believe that a useful indication is found by the comparison of the day and night urine. The volume and most of the constituents of the day urine divided by the night is normally from 2 to 2·5. It will be seen that in Fig. 1 it is 1·6 on the 21st and 0·6 on the 22nd. In an extremely serious case of neurasthenia and malnutrition with a blood pressure of 175 millimetres of mercury the night-day quotient was habitually 0·6. In this case there had been sleeplessness for several years. After six weeks' rest in bed, with the exception of an hour daily, the blood pressure fell to 115 millimetres and the day-night quotient was 1·3 to 1·5. This was associated with a considerable improvement in the general condition. The following analyses (Table III.) were from a patient who four months previously nearly died in consequence of a condition that culminated in a fall of blood pressure from 145 to 90 millimetres in a few days. The changes shown in the analyses were the result of rest and an addition of two eggs to the daily ration in the morning. Sleep, appetite, and general fitness were considerably improved. The necessary information can be obtained by collecting separately the 12 hours' urine before and after bedtime when no supper is taken.

*Variations in the Starch Ration.*

During my work on this subject I have had exceptional opportunities of observing the characteristics of the adaptation of the energetic and resourceful peasantry of certain districts of Austria and Northern Italy. From the standpoint of the science of the conscient adaptation to environment they would afford most valuable material for scientific observation. They have, generally speaking, considerable intelligence and an extraordinary power of forceful and continuous work. The necessarily narrow range of their choice of foodstuffs would make an investigation of their adaptation comparatively simple. As far as my observation goes, the work of a healthy, starch-feeding peasant is steady, untiring, and characteristically deliberate, a point which is well illustrated by the Italian proverb, "Chi va piano, va sano e lontano." I had the opportunity of watching the habits of some Tyrolese peasants near Windisch Matrei while living in a mountain hut for five months during the summers of 1905 and 1906. In

[17] Von Noorden: Op. cit., vol. ii., p. 360.
[18] Loeb: The Dynamics of Living Matter, pp. 79 and 80.
[19] Loeb: Collected Papers, p. 79.
[20] Von Noorden: Op. cit., vol. i., p. 83.
[21] Op. cit., vol. iii., p. 1056.

TABLE III.—*Analyses Illustrating the Effect of Rest and an Increased Ration of Phosphorus on the* $\frac{Day}{Night}$ *Urinary Quotient.*

| Date. | | Volume. | Specific gravity. | Solids. | Chlorides. | Urea-N. | $P_2O_5$. | Earthy phosphates. | Acidity grammes oxalic acid. | Uric acid. |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | ... | 425 | 1027 | 24·6 | 6·8 | 3·7 | 0·85 | 0·233 | — | 0·376 |
| | | 450 | 1027 | 27·6 | 7·29 | 3·62 | 0·81 | 0·162 | — | 0·343 |
| 27 | ... | 325 | 1026 | 19·0 | 5·45 | 2·86 | 0·39 | 0·162 | — | 0·244 |
| | | 400 | 1029 | 26·9 | 6·4 | 3·94 | 1·44 | 0·24 | — | 0·398 |
| 1 | ... | 340 | 1025 | 18·8 | 6·12 | 3·53 | 2·08 | 0·34 | 1·08 | 0·286 |
| | | 475 | 1025 | 26·3 | 6·65 | 4·44 | 1·33 | 0·427 | 1·8 | 0·381 |
| 2 | ... | 560 | 1029 | 37·6 | 9·07 | 5·47 | 2·01 | 0·476 | 1·34 | 0·427 |
| | | 500 | 1030 | 35·1 | 6·0 | 5·5 | 1·7 | 0·45 | 1·8 | 0·415 |
| 3 | ... | 575 | 1026 | 33·6 | 10·81 | 5·46 | 1·26 | 0·575 | 1·61 | 0·35 |
| | | 400 | 1030 | 28·0 | 6·0 | 4·67 | 1·36 | 0·41 | 1·62 | 0·37 |
| 5 | ... | 500 | 1029 | 33·6 | 8·0 | 4·46 | 1·3 | 0·5 | 1·00 | 0·336 |
| | | 400 | 1030 | 28·1 | 6·33 | 3·85 | 1·6 | 0·28 | 1·76 | 0·383 |

this region a man's prestige is determined by his carrying power. My landlord, the "Treeman" as he was called, was over 50 years of age but could easily carry a load of 100 kilogrammes for two or three hours up the Alps. A slight, undersized youth, aged 16 years, carried 48 kilogrammes down the mountain. Men, women, and children over six years of age work from sunrise till sunset; the character of their work can be imagined when it is realised that their hay and corn have to be carried up or down the Alps to the barns. Their principal food is wheaten bread eaten five times a day with milk and they are as poltophagic with their feeding as they are deliberate with their work. Is it possible to continue working in this way till well over 60 years of age without possessing a full faculty for metabolising starch? The devices adopted by those populations who have, practically speaking, nothing but the grim alternative of death when they can no longer metabolise starch are most instructive. The daily hot bath of the Japanese, the Russian, Turkish, and Chinese steam baths have not only the effect of aiding in the elimination of sweat but ensure the skin having an increased blood-supply with consequent metabolic activity subsequently to the bath. The widely spread custom of using vegetables containing potassium such as potatoes, vegetable soups, &c., has the effect of supplying the wastage of this element and preventing the loss of calcium phosphate during cold weather and when there is fatigue. During the silkworm season in Northern Italy, when the peasants work night and day, inquiry has shown that eggs are bought from them with difficulty as they find themselves obliged to add them to their ration. It is worthy of note that the peasant remedy for most ills is to "drink eggs," as they call it, sometimes for long periods. An interesting point is that the factory workers in the new industrial development of Northern Italy, having as yet insufficient wages to enable them to increase their phosphorus and proteid ration, are tending to increase their ration of acid wine, the organic acids of the wine probably acting much in the same way as phosphoric acid. The most prominent cause for the diminished faculty for metabolising starch is clearly the influence of cold. Querton showed that in the case of animals hibernating or when they were exposed to cold the cerebral neurons exhibited the beaded or moniliform reaction of the appendices; this reaction has been produced experimentally by asphyxia, fatigue, electrical stimuli, and such toxins as anæsthetics, morphine, chloral-hydrate, and alcohol, &c. The same reaction has been found in mental diseases. Demoor points out in writing of this reaction: "We know that between the state called pathological and a physiological reaction there is no absolute difference." Hibernation is also found in the case of man when exposed to cold. Thus, in the government of Pskof in Russia when there has been a bad harvest the peasants find themselves obliged to adopt the device of hibernating, or "lɔzke," as it is called. They are said to wake for a short time at midday, eat a small portion of bread baked in the autumn, and then go to sleep again. To combat the effects of cold the most successful device in the case of both men and animals is to take an abundant meat and fat diet. Its success is shown by almost universal practice and Laulanié and others have found that whereas varnished dogs eat more and live, rabbits, horses, &c., eat less and die in a few days. On the other hand, the power of forming ammonia to neutralise acids can be enormously increased in rabbits by feeding them with amino acids. Ricciardi[22] found that the variations in the degree of toxæmia were dependent on the area varnished. As to the nature and effects of the toxin von Araki[23] found almost constantly albumin, sugar, and lactic acid in the urine which he attributed to incomplete oxidation. In short, meat is required not only for maintaining nitrogenous equilibrium and the provision of suitable fuel but to maintain the intracellular alkalinity, which is probably absolutely necessary in most cases where the individual is exposed to cold or fatigue, or is the subject of chronic disease.

The hibernating animal when first exposed to the cold of the autumn suffers from a low degree of toxæmia which causes an increased appetite and a deposit of fat. Is it due to a similar process that obesity is caused by continuous fatigue and other forms of chronic toxæmia? When the cold, and consequently the toxæmia, increases the intracellular acidity results in sleep, the metabolism is reduced to a minimum, it can be said to be paralysed; it remains in this condition either till the cause is removed or death results. It is irresistible not to find strong resemblances between this condition and that of the varying degrees of temporary or permanent retarded nutrition.

This paper is a record of work that has necessarily been preliminary in its scope. It was undertaken to show how large a field for profitable research there is in the continuous observation of the reactions of the body to the commonplace environment of ordinary life.

### *Addenda.*

*Analyses.*—The processes employed were: For chlorides, Mohr's method; for phosphates, uranium nitrate; for ammonia, Folin's method; for uric acid, Hopkins's method; for urea, Brandeis's improved hypobromite method was used with his new ureameter. Two solutions, one of ammonium sulphate with one centigramme to two cubic centimetres and another of ammonium chloride with a centigramme to five cubic centimetres, were titrated on each occasion so as to obviate the necessity of making the calculations for barometric pressure and temperature. The earthy phosphates were precipitated by the addition of ammonia and the phosphates were separately estimated. The calcium and magnesium phosphate were estimated by dissolving the precipitate with ammonia in acetic acid, adding ammonium chloride solution and ammonium oxalate, setting aside for 24 hours, filtering, adding ammonia, and making a separate estimation of the magnesium phosphate after putting it aside for 24 hours. The calcium phosphate precipitate and the calcium precipitated from the filtrate after adding ammonia were separately estimated volumetrically after dissolving in hydrochloric acid with a decinormal solution of permanganate of potassium in the way recommended by Blarez.

Varese, Italy.

[22] Ricciardi, cited by von Noorden, vol. iii., p. 751.
[23] Von Araki, cited by von Noorden, vol. iii., p. 976.

# THE EPIDEMIOLOGY OF DIPHTHERIA

## IN THE LIGHT OF A POSSIBLE RELATIONSHIP BETWEEN THE DIPHTHERITIC AFFECTIONS OF MAN AND THOSE OF THE LOWER ANIMALS.

BY L. W. SAMBON, M.D. NAPLES, F.Z.S.,
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IN its issue of Jan. 4th, 1908, the *Field* drew attention to an epizootic of diphtheritis amongst wild pigeons in a wood near London and remarked that "this disease has not yet received the scientific study that it deserves, seeing that it attacks not only the wood pigeon but also domestic pigeons, poultry, and pheasants, and that it is by no means settled whether the avian parasite is the same as that which produces diphtheria in man." The succeeding number contained a letter by Mr. W. Dalziel Mackenzie of Fawley Court, Henley-on-Thames, stating that the disease was raging amongst wild pigeons in the woods of the district and that in one valley 1142 dead birds had been picked up in two days. Further information, published in the *St. James's Gazette* and other lay papers, showed that the epizootic extended for a considerable distance along the Thames valley. Some of the doves picked up dead or dying were sent to me for examination and I was able to ascertain that they had succumbed to "pigeon diphtheria," a membranous disease known to cause severe epizootics among these birds. The same, or a very similar disease, I had seen during the previous months in the domestic pigeon, the pheasant, the partridge, and the sparrow. Through unsolicited information received from intelligent and observant gamekeepers I gathered that some of the diseased pheasants exhibited signs of paralysis, and twice pigeons quite unable to fly were sent to me from the affected districts.

Many other birds are known to be subject to "avian diphtheria." The disease has been observed in turkeys, peacocks, guinea-fowl, domestic fowl, water-fowl, and parrots. Similar membranous affections are known to occur in mammals. They have been described from cattle, horses, sheep, swine, rabbits, dogs, and cats. Indeed, our knowledge of the occurrence of diphtheritic affections amongst animals runs back to the remotest antiquity. Plautus in one of his comedies (*Trinummus*, v. 497) speaks of a deadly epizootic angina amongst swine:—

Sues moriuntur angina acerrume.

Unfortunately, we know next to nothing concerning the etiology of these maladies and their relation to human diphtheria.

That diphtheria may be conveyed from the lower animals to man and reciprocally from man to the lower animals is a very old and general belief. The simultaneous occurrence of diphtheria epidemics in man and of epizootics of a similar nature in animals has been observed again and again in all ages and places. Their relationship is unhesitatingly admitted in the accounts of the great epidemics which desolated Europe between the sixteenth and eighteenth centuries. The deadly epidemic of Naples in 1618 and that of Paris in 1743 are reported to have followed on epizootics of the same nature, and Noah Webster in 1800 mentions the occurrence of fatal angina in man synchronously with a "pestilence amongst cats which swept away those animals by thousands." Amongst recent instances I may mention the epidemic of Frankfort in 1886 and that of Grafton, Illinois, America, in 1900. In Frankfort the authorities became so fully convinced that the epidemic was related to a concurrent avian epizootic, that they issued a warning to the public stating that the disease might be contracted either by direct contact with the diseased birds or by means of milk from cows kept in the proximity of infected poultry. In Grafton the epidemic was preceded by a severe epizootic amongst rabbits. These animals were placed on the market at prices so cheap that they were used largely as food. A microscopic examination showed that they had died from diphtheritis and the physicians warned the townsfolk to abstain from eating the rabbits.

Numberless instances of the transmission of diphtheria to man from fowls, cattle, swine, horses, sheep, and cats have been recorded in medical literature. At the Wiesbaden Medical Congress in 1883 Gerhardt related that a large number of fowls were imported from Verona to the village of Nesselhausen (Baden); some were suffering from diphtheritis when they arrived and about half of them died; all the chickens bred in incubators died, four cats kept in the place died from diphtheria, and four of the six men employed on this poultry farm had diphtheria. One man who was pecked by one of the diseased birds on hand and foot presented false membranes on these parts. No case occurred in the neighbouring village.

Dr. G. Turner, in an interesting report to the Local Government Board, mentions an epidemic of diphtheria that occurred in the village of Braughing in 1883. The first cases were connected with a farm on which the fowls were dying from diphtheritis. Subsequently the disease made its appearance on other farms, where it was also preceded by a similar affection amongst fowls. During the summer of 1886, while investigating epidemic diphtheria at Farnham, he found that there had been simultaneously an epizootic amongst fowls. A similar epizootic had occurred also amongst fowls and turkeys at Ash, amongst fowls at Long Eaton, and amongst fowls and pheasants at Tongham. At Tongham a man bought a chicken from an infected farm and took it home; diphtheria broke out in his house shortly afterwards. This was the first case in the village. Similar disease was noticed amongst the cats at Aldershot, Farnham, Yateley, and Petersfield. At Braughing both swine and horses suffered from sore-throat sickness immediately after the epidemic amongst human beings.

In the *Journal de Santé* of Dec. 23rd, 1888, is an account by Dr. Bild of the first occurrence of diphtheria which, after 30 years of practice, he had seen in the principal town of the small Greek island of Skiatos. It is stated that in June, 1884, Dr. Paulinis was called to see several children who were simultaneously affected with diphtheria, and of whom five died. The epidemic invaded the whole town and in five months 125 persons had been attacked and 36 had died. The cause of this sudden invasion being investigated, it was ascertained that in the locality where the prevalence commenced was a courtyard occupied by turkeys recently brought by boat from Salonica. These turkeys had exhibited false membranes in the fauces, and all had died except one, and in this instance the bird is reported to have been still suffering from paralysis of its feet, which incapacitated it from walking.

In 1892 Debrie[1] reported that soldiers suffering from diphtheria were taken to the Sebdou Hospital. Soon after their arrival certain fowls fed by one of the hospital attendants developed diphtheritis, later the owner of these birds and a soldier who looked after them were also attacked.

Opinion varies greatly as to the value of such records. Whilst numerous investigators emphatically maintain from personal observation that diphtheria may be transmitted from the lower animals to man, others, such as Friedberger and Fröhner,[2] dismiss the whole evidence as "a mere assumption due to utter ignorance of veterinary pathology." To me it seems that the synchronous occurrence of diphtheritic disease in man and in certain of the lower animals observed in almost every outbreak must certainly indicate more than a fortuitous coincidence. Besides, considering that human diphtheria is easily transmitted by inoculation to many kinds of animals it seems only reasonable to surmise that it may be conveyed reciprocally from the lower animals to man. Unless we admit this we must believe in the spontaneous origin of diphtheria to explain its sudden appearance with no history of previous infection or recent importation, an inadmissible theory. Gallez[3] very justly remarks that "if medicine as formerly had remained a science of observation, in presence of the relatively enormous number of facts brought to-day in support of this hypothesis no one would dream of doubting it, and the identity of animal and human diphtheria would be an established fact."

In man diphtheria is now recognised to be due to a specific bacillus, the *Bacillus diphtheriæ* of Klebs and Löffler which in a large percentage of cases may be demonstrated in the false membranes together with other bacteria, some of which, when present and sufficiently numerous, seem capable of enhancing its virulence. Normal cultures of *Bacillus diphtheriæ* inoculated to susceptible animals invariably reproduce the disease, the specific organism may be recovered from the inoculated animals, and the antitoxic serum of immunised animals is successfully employed, not only in the prevention, but also in the treatment, of this fearful disease, the mortality of which it has considerably reduced. But in

[1] Archives de Médecine et Pharmacologie Militaires, 1892, No. 3, p. 204. [2] Veterinary Pathology, vol. i., p. 233.
[3] Bulletin de la Société Royale de Médecine de Belgique, 1895.

**many instances expert bacteriological examination fails to isolate the Klebs-Löffler bacillus in cases of unmistakeable diphtheria and, on the other hand, there stands the indubitable fact that the bacillus is often to be found in the noses and throats of apparently absolutely healthy subjects. Cases not associated with the Klebs-Löffler bacillus are looked upon by many as anatomically similar but bacteriologically distinct diseases and are termed "diphtheroid affections" or "pseudo-diphtheria." Some of these cases are ascribed to organisms belonging to a different biological group. Thus authors describe a "streptococcus diphtheritis" caused by *Streptococcus pyogenes*. Others are produced by bacilli morphologically similar to *Bacillus diphtheriæ*, but differing from it either in cultural peculiarities or in pathogenic properties. The latter are called pseudo-diphtheria bacilli. With regard to the diphtheritic affections of animals information is very scanty. I will summarise it briefly under separate headings.**

*The horse.*—Diphtheritis is known to occur in the horse. It is a fatal and contagious disease, called croup or angina by veterinary surgeons. Dr. Turner[4] mentions one or two cases of diphtheria in man preceded or followed by a similar disease in the horse. Professor W. J. R. Simpson, who made inquiry for the Local Government Board as to a prevalence of diphtheria in and about Shaftesbury in 1885, says that according to the testimony of a veterinary surgeon in the locality a so-called "laryngitis with sore-throat" had been by no means uncommon during the epidemic. Dr. Louis Cobbet[5] refers to a case in the horse in which the Klebs-Löffler bacillus was isolated from the nasal discharge. The animal belonged to the father of a girl who was suffering from diphtheria. Stevenson[6] points out how frequently the disease attacks children living in mews and occupying rooms over the stables. Dogs and cats frequenting the mews also suffer in the same way. The far greater prevalance of diphtheria among mounted troops than in infantry is no doubt connected with disease in the horse. It has been found by Longuet that in the French army for the period 1872–85 the relative proportion of diphtheria among cavalry and infantry was in the ratio of 10 to 3. In the German army, 1874–82, diphtheria was more than three times as common among cavalry as among infantry.

*Cattle.*—The disease is known as croup or angina in full-grown animals but in calves it is called diphtheria. Young cattle, varying from a few weeks to a few months old, are especially liable. The disease usually occurs during the fall of the year. Damman, who first described "calf diphtheria" in 1877, believed it to be identical with human diphtheria, but Löffler, who investigated the disease for the German Imperial Board of Health, found a bacillus which forms long undulating threads and differs in many other respects from the *Bacillus diphtheriæ* of man. The relation of cattle diphtheritis to human diphtheria is strongly suggested by the frequent spread of the disease amongst human beings by the agency of milk. Power, in 1878, was the first to show that diphtheria might be disseminated in this way. Since then many outbreaks have been traced with the greatest certainty to milk. The annual reports of the medical officers of the Local Government Board furnish many interesting facts bearing on this question. In the report for the years 1889–90 an epidemic in Macclesfield district is described. It was noticed that almost all the patients had procured their milk from the same dairy and that those members of each household who were the chief drinkers of raw milk were attacked first. On inquiry at the dairy it was ascertained that some days previous to the outbreak the milk of a newly purchased cow, which had recently calved, had been added to the stock of milk. This cow was segregated and the issue of her milk stopped, and from that time no fresh cases of diphtheria occurred. After some weeks the milk of this cow was again sold and soon after fresh cases of diphtheria followed amongst the customers who used it. On the teats and udder of this cow vesicles and pimples were found at the time of the second series of cases. Dr. E. Klein[7] inoculated milch cows subcutaneously with cultures of *Bacillus diphtheriæ*. A swelling appeared at the seat of inoculation and subsided in a few days. On the teats and udders three to four days after inoculation vesicles, pustules, and ulcers appeared. In the lymph from these induced vesicles the diphtheria bacillus was demonstrated both in cover-glass preparations and by cultures. These cows showed a slight febrile reaction during the first two or three days and coughed slightly while the eruption manifested itself. Cultures from the milk showed diphtheria bacilli. Eventually the cows succumbed to the disease, one after 14 days, the other after 24. In 1890 Dr. Klein[8] observed ulcerative eruptions on the udders of cows whose milk was suspected to have conveyed diphtheria. The eruption was similar to that produced by experimental inoculation. It has been objected that the lesions observed by Klein on cows' udders were possibly those of cow-pox and that the milk may have been contaminated by human agency after leaving the udder. Of course, it is quite possible for milk to become contaminated with the *Bacillus diphtheriæ* from the hands, bodies, or clothing of milkers, dairy attendants, and milk handlers, who either have diphtheria themselves or have been intimately associated with diphtheria patients, and Dr. Klein has shown that milk once inoculated with the diphtheria bacillus serves as an excellent culture medium for the organism even at such ordinary temperatures as 18°–20° C. But the more we learn of milk as a vehicle of diphtheria the more probable does it become that the infection is much more frequently derived from the cow herself than from specific contamination by the human subject.

*Sheep.*—The disease is especially prevalent in young lambs; it is in every way similar to that of calves.

*The hog.*—Diphtheritis has been described from the hog by several authors. Dr. Sanderson[9] records an instance in which swine in a sty adjoining a cottage in which cases of diphtheria occurred were attacked with the disease as proved by post-mortem examination. In Southern Russia diphtheria is believed to be contracted from swine affected in a similar way.

*The rabbit.*—Information is very scanty with regard to diphtheritis in the rabbit and other small mammals. I have already mentioned an epidemic of diphtheria in the town of Grafton, Illinois, America, in 1900, which was ascribed to a simultaneously occurring diphtheritic disease amongst wild rabbits.

*The mouse.*—Dr. Bellard has suggested that diphtheria in man may be related to a similar disease in mice, but on what evidence I do not know. Rats and mice are very refractory to inoculations of *Bacillus diphtheriæ*.

*The cat.*—The cat is mentioned in numerous reports on outbreaks of diphtheria either as the conveyor of the disease or as having contracted it from human beings. Dr. Klein, writing in 1889, states that cats are subject to an infectious disease occurring in association with human diphtheria, and that "this disease casually occurring in the cat is very similar to the malady artificially producible in that animal by inoculating it with human diphtheria." In 1905[10] the bacteriologist for the burgh of Govan issued a report on the result of his investigations into the possibility of the infection of diphtheria being carried by the lower animals, especially cats. Two cats were examined and from both were obtained and cultivated bacteria corresponding in every respect to those of human diphtheria. In one case the animal had been in the habit of sleeping in the same bed as the patient; in the other the child had been fondling it in her arms. As both cats had been ailing previously to the children becoming affected infection is quite likely to have been conveyed by these animals. Of five cases of diphtheria reported in Govan three patients came from two families living in adjoining properties and two from a house in a tenement directly opposite. In the circumscribed area inclosing the back courts of these buildings there had been a stray cat which had eventually obtained a home in one of the families affected. The animal when examined was found to be suffering from post-diphtheritic paralysis of the legs.

*The dog.*—The dog may also suffer from diphtheritis. Williams[11] says that during the winter 1878–79 he had the opportunity of seeing several dogs, the property of various owners, that had this fatal form of sore-throat and "presented signs very nearly approaching those of diphtheria as described by physicians."

*The pigeon.*—Diphtheritis is exceedingly common amongst pigeons, both wild and domestic. The birds are at times literally decimated by the disease which occurs in vast epizootics. Löffler in 1884 isolated a bacillus from the false membranes of affected pigeons. He looked upon it as distinct from that of human diphtheria and proposed to call it *Bacillus diphtheriæ columbarum*. Cultures of this organism inoculated into normal pigeons reproduced the disease with abundant false membranes, they gave rise to milder lesions in fowls, killed sparrows in about three days, produced ulcerations in guinea-pigs, necrosis in rats, and only a slight redness in dogs. The very same year Emmerich stated at the Hygiene Congress at the Hague that he had found in pigeon diphtheritis a bacillus identical with that of human diphtheria. Wheler[12] has observed diphtheria in families that had eaten diphtheritic pigeons.

*Fowls and other birds.*—Diphtheritis is very common amongst fowls, ducks, guinea-fowls, turkeys, peacocks, pheasants, partridges, parrots, and other birds. The disease in every way resembles that of pigeons, but bacteriologists seem inclined to distinguish, not only in the different orders and families of birds, but in each single host species, various types corresponding to different kinds of bacteria. Without entering into an unprofitable discussion of the many different organisms described, I will point out that several investigators have described organisms indistinguishable from the Klebs-Löffler bacillus—Gallez[13] found in the nasal mucous membrane of fowls affected with contagious coryza a bacillus identical in colour reaction and cultural characters with *Bacillus diphtheriæ*. The same or a similar organism was observed by Ferré[14] in diphtheritic lesions in fowls. Guerin,[15] as the result of experiments and observations in many epidemics of fowl diphtheritis, concludes that human diphtheria differs from that of fowls, which he ascribes to a Pasteurella, but adds that twice he isolated from the false membranes of diseased fowls an organism morphologically identical with the Klebs-Löffler bacillus. This organism was non-virulent; he therefore believes that it has no relation to diphtheria, but may be the same as the pseudo-diphtheria bacillus so frequently found in the throat of healthy human beings. In 1894 Loir and Ducloux[16] had the opportunity of investigating in Tunisia a diphtheritic epizootic which raged amongst fowls, turkeys, ducks, pigeons, and sparrows. As frequent cases of angina occurred amongst the persons employed on the affected poultry farms the authors made some bacteriological examinations, and in a child suffering from a severe form of diphtheritis they succeeded in isolating the same organism they had found in the birds—a bacillus somewhat resembling the tubercle bacillus. The inoculation of cultures of this bacillus from man reproduced the disease in fowls. In 1896 Ritter[17] found in the false membranes of diphtheritic fowls a bacillus similar to the one isolated by Löffler in calf diphtheria. Chicoli,[18] Boing,[19] Hingworth,[20] Barbier,[21] Bilhaut,[22] and many others have quoted cases of direct transmission of diphtheritis from fowls to man.

**Summing up all the available information, it seems to me that our position with regard to diphtheria is very much the same as that concerning tuberculosis. Koch, who discovered the bacillus of tuberculosis in man in 1882, first believed that all forms of the disease both in man and animals were caused**

[4] Local Government Board Report, 1889.
[5] THE LANCET, August 25th, 1900, p. 573.
[6] Brit. Med. Jour., April 3rd, 1886.
[7] Local Government Board Report, 1889.
[8] Local Government Board Report, 1890.
[9] Second Report of the Medical Officer to the Privy Council, p. 246.

[10] THE LANCET, Dec. 23rd, 1905, p. 1869.
[11] Principles and Practice of Veterinary Medicine, eighth edition, 1897
[12] American Practitioner, 1887.
[13] Annales de Médecine Vétérinaire, 1836, p. 309.
[14] International Congress of Hygiene, Madrid, 1898.
[15] Annales de l'Institut Pasteur, Dec. 25th, 1901.
[16] Ibid., vol. viii., 1894, p. 599.
[17] Reference in Centralblatt für Bakteriologie, 1896, p. 66.
[18] Sicilia Agricola, 1884.
[19] Deutsche Medicinische Wochenschrift, 1886, p. 552.
[20] Brit. Med. Jour., 1888, vol. ii., p. 166.
[21] Gazette Médicale de Paris, 1889, p. 37.
[22] Journal de Médecine de Paris, 1890, p. 441.

by the same micro-organism; later, at the Berlin Congress, he declared that he no longer considered the tuberculosis of birds identical with that of mammals; and in 1900, at the London Congress he asserted that bovine and human tuberculosis are quite distinct. Koch's statements embodied not only his personal observations but those of numerous investigators who had shown that tuberculous diseases differ in man, mammals, birds, and reptiles, and that in each class the specific organisms exhibit some differential characters. Already in 1884 Klein had expressed the opinion that human and bovine tuberculosis are not one and the same disease, but against the opinion formed in the laboratory was the opinion formed in the wider field of general experience. The evidence in favour of the transmissibility of bovine tuberculosis to man is overwhelming, and recent experimentation has proved it beyond doubt. I need but mention the conclusions of the Royal Commission appointed to inquire into the relation of human and animal tuberculosis as stated in their second interim report: "There can be no doubt but that in a certain number of cases the tuberculosis occurring in the human subject, especially in children, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis and that in the majority at least of these cases the bacillus is introduced through cow's milk." Experimental investigation is therefore in perfect accordance with the experience of clinicians (Carmichael, Casper, and Heneke) who so far back as the beginning of the nineteenth century connected the prevalence of scrofula amongst children with the ingestion of milk from diseased cows.

With regard to avian tuberculosis opinion is also very much divided. In a recent paper on the subject[23] Mr. S. G. Shattock, Dr. C. G. Seligmann, Mr. L. S. Dudgeon, and Dr. P. N. Panton maintain the non-identity of the human and avian tubercle bacillus. But their experiments were limited to the infection of pigeons with human tubercle bacilli and of guinea-pigs and one Rhesus monkey with avian tubercle bacilli. The results were positive in both series of experiments, but the human bacillus set up only a local or glandular disease in the pigeon and the avian bacillus proved likewise only slightly pathogenic to the mammal. Had they used parrots and rabbits instead of pigeons and guinea-pigs their results would probably have been far more favourable to the specific identity of human and avian tuberculosis, because both parrots and rabbits are known to be just as susceptible to human as to avian tuberculosis. It is perfectly true that the bacilli of human tuberculosis differ from those of avian tuberculosis in morphological, cultural, and pathogenic characters, but we should not forget that considerable differences are also met with between the tubercle bacilli of different species both of mammals and birds. For instance, the hepatic tubercles of the fowl and of the pheasant are not only distinguishable from the hepatic tubercles of mammals, but they are highly differentiated amongst themselves, although developing in so closely allied animal species. Differences no less notable are observed when tubercle bacilli present in various individuals of the same species are compared with each other. Too much importance should not be given to such arbitrary differences of convenient classification. In very plastic organisms modifications are brought about very easily by environmental changes, even profound structural mutations may occur in a comparatively short time. Schmankewitsch was able to transform the crustacean *Artemia* into an entirely different genus *Branchinecta* within a few generations simply by a change in the salinity of the water. Our domesticated animals and cultivated plants offer numberless examples of extreme variation in members of the same species reared under different conditions. The tiny chihuahua spaniel differs considerably in form, size, and habits from the great Danes or mastiffs of northern Europe. In the numerous varieties of the domesticated pigeon we find considerable changes not only in form, bulk, and plumage, but in the very number, form, and proportion of bones in the skeleton. So great are these alterations that if these creatures were submitted for dissection to a naturalist who knew nothing of the history of the bird he would have no hesitation in classing them as belonging not only to different species but to different genera. Even without any appreciable structural change there may be important biological variations. The stem eelworm (*Tylenchus devastatrix*) lives and reproduces in various cultivated plants, such as rye, oats, stored onions, hyacinths, buck wheat, potatoes, and clover, and in wild plants, such as *Poa annua*, *Anthoxanthum odoratum*, *Dipsacus silvestris*, and *Polygonum persicaria*, but not to the same extent in all. However, eel-worms, of which the progenitors have developed for many years exclusively in rye or buck wheat, are not easily transferred to another kind of plant or, at any rate, they do not multiply vigorously there. It is the eternal question of seed and soil.

With regard to parasitic organisms that have a wide zoological distribution I think we might aptly compare the several varieties from different kinds of hosts to the various "geographical varieties" of certain free-living species and term them "host varieties." To give them specific value is certainly wrong and misleading. At the utmost they might be classified as sub-species and receive the trenominal nomenclature, as already has been done for the host varieties of certain parasitic mites such as *Sarcoptes scabiei*. The important point is not to forget that all varieties derived from the same species are adaptive forms more or less intermutable. Thus, whatever may be the differences exhibited by tubercle bacilli from hosts belonging to different classes of the animal kingdom agreement is universal as to the identity of their soluble products, notably tuberculin.

With regard to diphtheria and its possible relation to similar membranous affections amongst animals, it is important to notice that of all known bacteria *Bacillus diphtheriæ* is the one which exhibits the greatest variation in morphological characters, cultural peculiarities, and pathogenic properties. The diphtheria toxins, like those of tuberculosis, are the same both in human and animal diphtheritis.

*Epidemiology.*—It is for bacteriology and experimentation to solve the question of the relation, if any, between human and animal diphtheritis. Meanwhile, however, we should not neglect the study of the epidemiology of the disease because if properly investigated it may not only throw light on this point but disclose other important facts. Unfortunately, the epidemiology of diphtheria has been entirely misunderstood by the majority of investigators and greatly obscured by erroneous etiological preconceptions. Most physicians and medical officers of health even now believe that diphtheria is brought about by faulty sanitary circumstances. It is owing principally to this error that so little progress has been made in our knowledge of the natural history of this formidable disease. A careful examination of reports of numerous outbreaks shows very clearly that insantary conditions of dwellings, defective sewerage, polluted water-supplies, poverty, and uncleanliness have no special connexion with the incidence of diphtheria. It is true that unhygienic conditions may lower resistance and that overcrowding may favour the spread of the disease, but such circumstances are always present in every place. Diphtheria has prevailed with equal frequency and intensity amongst the poor and the rich, in the filthiest tenement houses and in the healthiest surroundings. Dr. Longstaff has shown that in England certain divisions, such as London and the North-Western (comprising Cheshire and Lancashire), which are by far the most densely populated and have the highest general death-rate, enjoy a low diphtheria mortality, whilst others, with a population mainly rural and a general death-rate below the average, show a high diphtheria mortality. Moreover, within recent decades diphtheria has considerably increased especially in large cities notwithstanding the general improvement of sanitation which has so greatly reduced the incidence of other infectious diseases.

Although sanitary conditions seem to have no influence whatever on the incidence and diffusion of the disease, yet many facts point strongly to the existence of some relation between diphtheria and manure.

In the majority of cases infection may be traced to an antecedent case and the influence of school attendance on the diffusion of the disease is now so generally accepted that the closing of schools is the earliest, if not the chief, measure adopted by local authorities to prevent the spread of the disease. No better proof of the contagiousness of diphtheria could be adduced than the fearful holocaust of physicians and nurses that professional devotion has sacrificed to this fell disease. It seems also beyond doubt that infection may be communicated by means of the bedding, clothing, and other articles used by the sick, and that premises occupied by diphtheritic patients may retain the power of infectiousness for months. It is important to notice, however, that the contagiousness of the disease presents certain limitations. It is frequently confined to a

[23] Proceedings of the Royal Society of Medicine, vol. i., 1907.

single parish, street, or house, and, unlike other contagious diseases, creeps slowly from place to place. Dr. Airy[24] records a very interesting observation. A parish school near the small town of Builth in Wales was attended in nearly equal proportions by children residing in a portion of that town and by others residing in lonely cottages and farmhouses on the hill sides. An outbreak of diphtheria occurred at this school; but the 20 children living in the town escaped, whereas of the 25 living on the hillsides eight were attacked. In all respects except their residence the children appear to have been exposed to the same conditions. A similar instance is reported by Dr. R. Bruce Low from Ashbourne in Derbyshire. A stream divides the town of Ashbourne into two parts. The Ashbourne part to the north of the stream lies mainly on rising ground formed of new red sandstone, whereas the Compton portion is situated on low-lying gravel or alluvium, and is liable to flooding in rainy seasons. The infant school is situated in the Ashbourne division, in a somewhat crowded locality close behind the market place, but the children attending it come from both divisions, the proportion of attendants from the two localities being approximately, Ashbourne 70, Compton 40. "But the diphtheria had been limited to such of the children as resided north of the river in Ashbourne proper."

Although infection from person to person and by means of fomites may be the usual means of diffusion amongst dense communities, we should not forget that diphtheria is pre-eminently a disease of rural districts and that very frequently the disease is scattered over wide areas, the majority of cases occurring in isolated farmhouses without any traceable personal communication. The preference of sporadic diphtheria for high, bleak situations induced Dr. Airy and others to suggest that the specific virus might be conveyed by the wind, and, indeed, it has been noted that the spread of the disease follows the direction of the prevailing winds.

A most striking fact in the epidemiology of diphtheria is its conspicuous invasion of towns within recent years. Taking London as an example, it appears that during the period 1861–70 whilst the diphtheria mortality rate per 1,000,000 living was for England and Wales 187, it was for London only 179. But in the next decennium the rates were 121 and 122 respectively, and in the decennium 1881–90 they were 163 for England and Wales and 259 for London.

Although adults are frequently affected the greatest number of cases occur between the third and twelfth years of life. The greatest number of deaths is between the second and fifth years. Infants in the first half-year of life are rarely attacked. With regard to sex, after the first four years of life, during which there is no difference, the disease appears to be somewhat more frequent in the female. Race is of no importance. Occupation has been disregarded owing to the fact that diphtheria is essentially a disease of childhood. But certain conditions, such as residence on farms or in mews, seem to increase liability to infection. A striking instance is that of the markedly greater prevalence of the disease in mounted troops than in infantry.

Altitude and geological formation seem to have no influence whatever. The disease has prevailed with equal intensity on high mountains and in deep valleys, along the sea shore and on plains far inland, on dry and wet soil, on basalt, sand, and clay; not infrequently on board ship.

Meteorological conditions seem likewise unimportant; diphtheria rages both in hot and cold weather, during drought and rain. In warm countries it has occurred frequently during the hottest months. In this country, and in temperate countries generally, it prevails far more frequently during the autumn and early winter. It was a common impression among the older writers, and indeed some of the more modern still hold the opinion, that dampness favours the development of diphtheria. The assumption is probably erroneous, but it is certainly a fact that the disease frequently prevails in valleys, along river courses, or in the neighbourhood of lakes and other water bodies. Rainfall seems to have no influence. According to Newsholme, "diphtheria only becomes epidemic in years in which the rainfall is deficient and the epidemics are on the largest scale when three or more years of deficient rainfall immediately follow each other," but many epidemics have occurred with excessive rainfall. Unlike other diseases, epidemics of diphtheria proceed apparently unaffected by changes in the season and weather.

In his monumental work on geographical and historical pathology Hirsch points out that diphtheria epidemics show a distinctly cyclic character. The several cycles have extended over periods of various length, many only a few years, others several decades. The intervals between these cycles have also varied greatly. Not infrequently a period of ten or more years has intervened and the disease on its reappearance was thought to be a new disease. Sometimes the outbreaks have been limited to small districts; in other cases the deadly pestilence has extended over whole countries or even over more than one continent in veritable pandemics. The great epidemics have always been followed by long periods of permanency, especially in the more populous centres, and this has given the disease all the appearances of an endemic.

From these considerations, and from the fact that in many cases the outbreak of the disease in a certain locality can be shown to have been the consequence of its introduction from without, it is only reasonable to infer that, like plague, yellow fever, and cholera, diphtheria must have some permanent area of distribution beyond which it may widely extend from time to time under particular circumstances, to withdraw again to its usual stations after a longer or shorter period of riot outside them. Unfortunately, the only indication we have on this point is one of ancient nomenclature. Aretaeus of Cappadocia (about A.D. 30–90) states that the disease is called Egyptian and Syrian ulceration (*Ἕλκεα Αἰγυπτια καὶ Συριακὰ*) on account of its greater prevalence in Egypt and Syria.

Of special importance are the distribution of the disease in the various countries and the routes which it has followed in particular invasions. It has been shown by Dr. G. B. Longstaff[25] that during the 26 years 1855–80 the greatest incidence of deaths from diphtheria in this country took place on the eastern coast—namely, in Lincolnshire, Norfolk,

Dr. Longstaff's map of the average diphtheria death-rates. Twenty-six years 1855–80. (England and Wales taken as 100.)

Sussex, and North Yorks; that next in order came East Yorks, extra metropolitan Kent and Essex, counties which are also on the eastern coast, together with Wales and certain counties within or bordering upon the Midlands; whereas the smallest death-rates from this disease were recorded in Lancashire, Devon, and Somerset, on the one hand, and in inland counties such as Bucks, Herts, Northampton, Leicester, and Gloucester on the other.

Having thus sketched very briefly the principal features in the epidemiology of diphtheria, I will endeavour to show

[24] Report to Local Government Board on Several Outbreaks of Diphtheria in the Fourth Quarter of 1879, pp. 18–19.

[25] Supplement to the Report of the Local Government Board, 1887.

that the epidemiological data strongly support a relationship between human diphtheria and similar affections in the lower animals and that conversely the interchange of the disease between the lower animals and man explains many points in the epidemiology of diphtheria hitherto obscure and impenetrable.

As soon as we recognise the unity of the disease in man and in the lower animals we immediately understand its geographical peculiarities, its seasonal prevalence, its cyclic recrudescences, its rural distribution, its preference for the neighbourhood of water bodies, its progress along the direction of the prevailing winds, the frequent occurrence of cases in isolated farmhouses, in out-of-the-way places along the sea-coast, the greater prevalence among children, especially female children, the heavier toll it levies on mounted troops as compared with infantry, the connexion with manure, the recent increase in towns, the unimportance of geological, orographical, meteorological, and sanitary conditions. But to understand thoroughly all these facts we must, in the first place, recognise that as in plague and tuberculosis so in diphtheria the epidemiology of the disease is exceedingly complex owing to the wide zoological distribution of its causative agent and the various interaction of different animals brought about by variations in the specific organism which render it more or less adaptable to animals nearer allied to or further removed from the usual host species, just as in the case of the eel-worm aforementioned.

A certain number of epidemics have been traced to milk containing the specific organism. In most cases evidence pointed to the cow as the source of the infection; anyhow, the disease was thus traced from town to farm, and not infrequently at the farm either human beings, or cats, or swine, or poultry were found to be suffering from throat affections.

Other outbreaks limited to cavalry regiments or to certain stables and mews seem to indicate with equal suggestiveness the horse as the source of the disease in man; here also cats and poultry or sparrows seem to have suffered similarly at the same time. The prevalence of the disease in cattle and horses would explain the suspicion which has been so long and persistently attached to manure. Tissier [26] and Longuet [27] observed that in 40 per cent. of cases manure, on which diphtheritic fowls had been disseminating false membranes, was responsible for the diffusion of the disease. Dr. Newsholme and others have suggested that the diphtheritic germ might spend a stage of its life as a saprophyte in the soil, on manure, or on rags. I would draw attention to a possible rôle of the house fly in this connexion. Manure, especially horse manure is the chief breeding place of this insect. Countless numbers of its larvæ and pupæ may be found in every heap of manure, and it is for this very reason that fowls are attracted to manure heaps. Diphtheritic bacilli present in the manure from the horse or in the false membranes expectorated by the fowls may be ingested by the maggots and retained in a living condition within their intestines. We know that the bacilli of plague, tuberculosis, enteric, cholera, anthrax, &c., pass unharmed and may even be retained alive for weeks in the digestive tract of flies and other insects. Stiles placed fly maggots with some *Ascaris lumbricoides* and the latter were devoured; the eggs of the *Ascaris* were found not only in the fly larvæ but also in the pupæ and in the adult insects which developed from them. Evidently, then, the adult fly would serve as a disseminator of the parasite and if the eggs obtained the proper stage of development the fly might infect man directly by depositing them on articles of food.

The great frequency of diphtheritis amongst fowls, domestic pigeons, and certain game birds, such as pheasants and partridges, that are reared by the thousand in the neighbourhood of farms has long suggested the transmission of the disease from the farm birds to the farm mammals and either directly or through the latter to man. Finally, it is only reasonable to surmise that the farm birds, at any rate the farm pigeons, may contract the disease from the wild pigeons and more especially the wood pigeon or ring dove (*Columba palumbus*), the flocks of which are known to be subject to deadly epidemics of diphtheritis. The ring dove is generally distributed throughout Europe and is very common in Great Britain, having increased largely in numbers within recent years owing to the destruction of birds of prey, the increase of coverts and the great amount of land now planted with turnips and other green crops serving to supply it with food in the winter months. It collects in immense flocks in autumn, and in severe winters the local birds receive considerable accessions through migration either from the north or the continent. In October and November, 1884, the country between Berwick-on-Tweed and Yarmouth was greatly infested by migratory flocks and another large immigration was noticed in 1894. The steady increase in the number of wood pigeons during recent times, their greater abundance in the eastern districts, especially during autumn and winter, and their invasion of towns within recent years explain in a most remarkable way the rural distribution of diphtheria, its occurrence in isolated places, especially near the coasts or even in lighthouses, its greater frequency in the eastern districts of this country, its prevalence during the last quarter of the year, and its recent increase in towns.

Concurrently with the ring dove other *Columbidae*, such as the stock-dove (*Columba oenas*), have also to be considered as possible factors in the epidemiology of diphtheria. The stock dove has also greatly increased in England within recent years. In many parts of Central Europe this species is even more abundant than the ring dove. In this country it inhabits wooded crags in Wales, the cliffs of Dorset, some parts of Devon, Derbyshire, and even those near Flamborough Head in Yorkshire. In treeless areas, such as are met with in Suffolk, Norfolk, Lincolnshire, the East Riding of Yorkshire, Lancashire, Cumberland, &c., it deposits its eggs in rabbit burrows. This peculiar habit might suggest the transmission of diphtheritis between the bird and the rodent. Experimentation has shown that pigeon diphtheria can be transmitted to rabbits by inoculation. The distribution of the *Columbidae* as a group, their migratory habits, and the considerable increase of certain species in recent years are sufficient to explain the epidemiology of diphtheria, just as the distribution and migrations of rats explain the epidemiology of plague.

There is another bird which I should like to mention in connexion with diphtheria and that is the common quail (*Coturnix coturnix*). I am not aware that any one has ever reported the disease from this bird, but it belongs to the family *Phasianidæ* that includes fowls, turkeys, pea-fowl, guinea-fowl, pheasants, and partridges, all of which are severely affected. The quail is notable for its extended migrations. Its range is very great, for it extends throughout the whole of Europe, in Asia as far east as Japan, and in Africa as far south as the Cape Colony. Immense flocks annually visit the countries bordering on the Mediterranean, especially on the spring migration, when, as of old in Sinai, multitudes come up in the night and cover the land. The majority pass northwards though many remain to breed. In autumn, on the other hand, a considerable number sojourn in the south of Europe and the north of Africa, though the majority go further south, always travelling with the wind. In England the quail used to arrive regularly every spring and leave for the south in October; some remained throughout the year in mild winters. They used to be plentiful in Hertfordshire, Cambridgeshire, Suffolk, Norfolk, Lincolnshire, and Lancashire, and from time to time unusual influxes took place. In recent years the bird has become exceedingly rare in this country. There is a passage in the Bible (Numbers xi. 31–34) that I am greatly tempted to look upon as indicating not only the occurrence of diphtheritis in the quail but also its tranference from this bird to man. The text says:—

> 31. And there went forth a wind from the Lord, and brought quails from the sea, and let *them* fall by the camp, as it were a day's journey on this side, and as it were a day's journey on the other side, round about the camp, and as it were two cubits *high* upon the face of the earth.
>
> 32. And the people stood up all that day, and all *that* night, and all the next day, and they gathered the quails: he that gathered least gathered ten homers: and they spread *them* all abroad for themselves round about the camp.
>
> 33. And while the flesh *was* yet between their teeth, ere it was chewed, the wrath of the Lord was kindled against the people, and the Lord smote the people with a very great plague.
>
> 34. And he called the name of that place Kibroth-hattaavah: because there they buried the people that lusted.

Now, it seems to me that no other disease could explain more satisfactorily than diphtheria the plague implied in this passage. Diphtheria manifests itself in the very fauces, and the text seems to indicate this localisation in a figurative way by stating that the Lord smote "while the flesh was yet between their teeth." The flesh of the quail has often been looked upon as poisonous. Pliny ascribes its poisonous qualities to the birds eating hellebore and the seeds of other poisonous plants. The Arabian physicians proscribed its use. In many parts of Northern Africa, in

[26] Revue d'Hygiène, 1887, p. 914.
[27] Ibid.

Abyssinia, for instance, the natives look upon the red-throated *Francolin* and other *Phasianidæ* as unclean. The supply of live quails to the English markets is derived from Egypt, Italy, and Algeria. As many as 200,000 are often brought to Leadenhall Market in a month during the season. The quail would explain why the disease was called in ancient times "Egyptian or Syrian ulceration." In Egypt, at the proper season, quails are so plentiful that the people cannot consume, in a fresh state, the number captured and therefore salt them down for future use or dry them in the sun. Diphtheria is even now very prevalent in Egypt, especially in Cairo, although in recent years Alexandria has suffered rather more than Cairo. In Syria the disease is far from rare.

In making post-mortem examinations of birds that had succumbed to diphtheritis I found false membranes in the oviduct of a hen pheasant. This observation brought back to my mind the finding of two small shreds of yellowish membrane some time ago in the albumin of a fowl's egg which I had broken myself, and suggested the possibility of the transmission of diphtheria by means of the eggs of infected fowls. Looking up the literature of avian diphtheritis, I found that several authors have noticed diphtheritic patches in the oviduct of fowls and ducks. Thus some cases are mentioned by Petit in the *Recueil de Médecine Vétérinaire* for April 15th, 1903. Given disease of the oviduct, the *intra-ovum* inclusion of diphtheritic bacteria and even of entire shreds of false membrane is a matter of course. We know that not only bacteria and fungi may be found in the white of birds' eggs but occasionally also comparatively large metazoan parasites. I have myself found on separate occasions a trematode (*Prosthogonimus ovatus*) and a nematode (*Heterakis papillosa*) in the eggs of fowls. They had been enveloped in the albumin whilst wandering into the oviduct. If any diphtheritic affection of the fowl is communicable to man, as is very forcibly suggested by numerous observations, then eggs must play an important part in the transmission of the disease.

The conveyance of diphtheria by means of milk and eggs would explain the great frequency of the disease in young children because their food consists almost entirely of these two articles frequently administered to them either in the raw condition or almost raw. It is probably by means of these foodstuffs that the disease is brought into towns, although, of course, it may also be introduced by infected human subjects or by infected animals, especially birds such as the ring dove and the house sparrow. Within recent years the ring dove has become quite common in all the parks and squares of large cities. It may be seen picking the seeds that strew the pavement of cab-ranks. It is quite conceivable that horses and sparrows may contract the disease from these pigeons. It is likewise conceivable that the cat, a natural enemy of the sparrow, may contract the disease from this bird, which is likely to fall an easy prey when paralysed by the disease. The rôle of the cat with regard to diphtheria appears to be of great importance. This animal after prowling in field and gutter has access to the sanctum of the bed-chamber, sleeps on the very bed, is fondled and kissed by the children, especially by the female children. Since 1800, when Noah Webster drew attention to the cat as a factor in the epidemiology of diphtheria, this animal has been noticed to suffer simultaneously with man in almost every outbreak of the disease.

Diphtheria epidemics are made up of extremely severe cases and of very mild ones. The numerous "sore-throats" which precede and accompany an outbreak of the disease may well be compared to the cases of *pestis minor* which precede and accompany the severe and fulminant cases of plague. In both instances the differences in severity may be due to the source from which the infection is contracted. It is quite possible that the parasite direct from some animal may produce in man a milder attack than when it has passed through the human subject and acquired a special adaptive virulence. Sir R. Thorne Thorne explained the relation between genuine diphtheria and the numerous cases of "non-infectious inflammatory sore-throat" noticed prior to, as well as during an epidemic of, diphtheria by "the progressive development of the property of infectiveness," and added, "I know no grounds for refusing to believe that organisms capable of producing a minor and an uncommunicable disease in particular stages of their growth, may in other stages of their growth, or in the course of their subsequent development, become capable of producing a major disease communicable from person to person, the affair being essentially one of soil."

In diphtheria, as in plague, we are confronted by the difficulties of a complex and intricate epidemiology. As in plague, so in diphtheria, a number of different animals seem to play a more or less important part in fostering and spreading the disease. But in diphtheria, as in plague, one particular kind of animal seems more especially concerned in the wider spread of the disease. In plague the rat, owing to its wide distribution, its great numerical prevalence, its close association with man, and, above all, its migratorial habits, is the true cause of the great pandemics which at various intervals desolate the world. In diphtheria probably a similar rôle is played by the pigeon.

It is obvious that in order to formulate efficient measures against any disease it is necessary to have a thorough knowledge of its causation and of the various factors that contribute to its spread and prevalence. I believe sufficient evidence has now been put forward to warrant a very earnest inquiry into the question of the relationship between human diphtheria and the similar membranous affections of the lower animals, and in an inquiry of the kind I should like to see the veterinary surgeon of the modern school take his full share of research work rather than adopt, as in the past, a negative hostile attitude which would be ridiculous in the face of the scanty and crude information at present available on the diphtheritic affections of animals.

Palace Gardens Mansions, W.

## A CASE OF CAVITY OF THE LUNG SUCCESSFULLY TREATED WITH OZONE.

BY GEORGE STOKER, C.M.G., M.R.C.P. IREL., M.R.C.S. ENG.

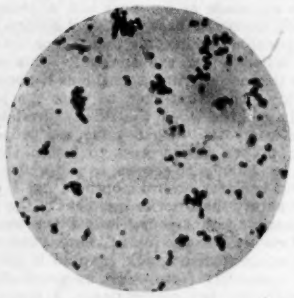
THE conditions that existed in this case make it, as far as I can ascertain, unique, and the results obtained completely confirm facts that I stated long since, facts that were obtained by close work and observation extending over 12 years. For the following particulars I am indebted to Mr. L. Cutler, whom I had the pleasure of assisting in the administration of the oxygen inhalations, &c.

In January, 1907, the patient had pneumonia with pleurisy. For the pneumonia he derived great benefit from the inhalation of oxygen and to a small extent of ozone that was generated in his room. In February he developed empyema and on the 25th and 28th of that month portions of ribs were resected, one in front and one behind. The posterior wound healed satisfactorily but the anterior wound did not; the discharge became offensive with a putrid odour and was dark-bluish in colour and grumous in character. About March 7th he developed blood poisoning. For this latter complication he was treated by Sir A. E. Wright with a vaccine prepared from the staphylococci in the discharge from the wound. He had only two injections, on March 10th and 12th. On the 14th a piece of lung tissue of about the size of a pigeon's egg came through the wound, all the symptoms of blood poisoning disappeared, and from that time he made steady and satisfactory progress to recovery as far as his general health was concerned, but the wound did not show any disposition to close. The separation of the slough and no doubt the suppuration that existed resulted in the formation of a sinus and cavity that together extended to a distance of 6½ inches from the surface of the chest wall to where they communicated with the air passages. Both air and pus passed freely through the external opening. These were the conditions that existed when the patient consulted me in the end of last May Something over two months had elapsed since the cavity had formed. During this period the usual methods of treatment had been tried, including change of air, but as far as closing the sinus or filling up the cavity were concerned without success, though the patient's general health had greatly improved.

I had been able to effect cures in a number of sinus cases and amongst them one resulting from an operation for the cure of hernia which had been in hospital for six years and had resisted all the ordinary methods of treatment. I therefore decided to begin with ozone in the present case for several reasons: (1) Being a much more powerful agent than oxygen it was likely to produce results in less time and thus to shorten the period of treatment; (2) having a strong smell and taste it could be quickly detected in the mouth and nose and so demonstrate its passage through the air tubes; and (3) if eventually, being of the same strength and

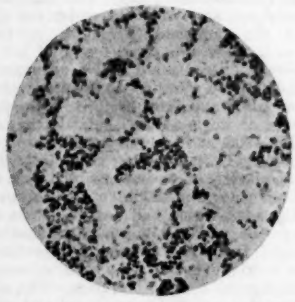
under the same pressure, the ozone took a longer time to reach the mouth and nose, and if the smell and taste were not so evident, this would point to some diminution in the size of the cavity and the calibre of the sinus. I say eventually because the first result, as will be seen, would probably be to facilitate the passage of the ozone into the mouth and of air through the external opening. The ozone was quickly smelt and tasted. At the end of the first week both passed more quickly and freely. This

FIG. 1.



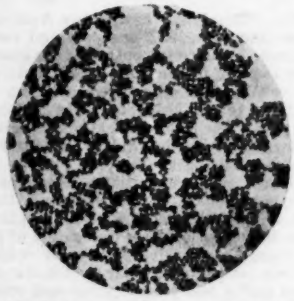
May 23rd, before treatment. 1. Streptococcus in large quantity. 2. Diplococcus in large quantity.

FIG. 2.



May 30th. 1. Streptococcus, large quantity. 2. Diplococcus, decreased quantity. 3. Staphylococcus albus and aureus, increased quantity.

FIG. 3.



June 28th. Staphylococcus albus and aureus, pure cultivation. An intermediate stage between Figs. 2 and 3, which is not shown by a photograph, showed: Streptococcus very few. Staphylococcus albus and aureus, largely increased quantity.

was an indication that the cavity was getting smaller. Gas under the same pressure will pass more freely through a tube that is interrupted by a cavity or expansion in proportion as the size of the cavity or expansion diminishes. During two days in the second week of treatment little or no air passed through the external opening and the ozone did not pass so freely into the mouth and nose. On June 13th the patient reported that air only passed through the sinus when he was lying down. On the 24th no air had passed through the sinus for three days. On July 9th the patient was cured and the external opening was closed. The treatment was carried out on 30 days during a period of seven weeks.

The bacteriological changes that took place in this case serve, I think, to confirm the views that I have often expressed: (1) Micro-organisms that are under healthy conditions become hostile; (2) that unhealthy micro-organisms require unwholesome matter for their nourishment; (3) that ozone and oxygen act by so changing and purifying the discharges that unhealthy micro-organisms, being deprived of the matter necessary for their existence, decrease and finally disappear; and (4) that oxygen and ozone have this effect on every micro-organism I have ever been able to discover in wounds or suppurating surfaces except the staphylococci, which under these conditions increase in number and often in size. These conclusions are the result of observations and microscopical examinations of the pus from some 500 cases treated with oxygen and ozone.

Bearing on the above conclusions, it is a significant fact connected with this case that the vaccine that produced such successful results was prepared from the staphylococci existing in the offensive and putrid discharge from the wound in a patient suffering from blood poisoning, yet in the same wound but under the influence of ozone and oxygen these very staphylococci steadily increased as the healing process proceeded, and were to me a clear indication that a healthy condition had been re-established and that cure would eventually take place.

Before commencing the treatment a specimen of pus was taken from the wound and a cultivation was made from it for microscopical examination. This was repeated at intervals during the treatment. The micro-photographs taken of the slides that were prepared show steady decrease and final disappearance of those micro-organisms that are hostile to healing, and a steady increase of the staphylococci which under the influence of ozone and oxygen always increase in number and often in size as the healing process proceeds.

Hertford-street, W.

## ANTERIOR DISLOCATION OF THE STERNAL ENDS OF THE CLAVICLES: TREATMENT BY FRACTURE OF THE CLAVICLES WITH GOOD RESULTS.[1]

BY T. H. MIDDLEBRO', M.B. TOR., F.R.C.S. ENG.

I MAY first recall the anatomical outlines of the sternum. The upper end of the sternum is divided into three areas: a central, which is the interclavicular area, and two lateral ones, which are shallow depressions in which articulate the comparatively large inner ends of the clavicles. An inter-articular disc of fibro-cartilage lies in each joint, attached above to the clavicle and below to the lower margin of the joints. Each joint has an anterior sterno-clavicular ligament, a posterior sterno-clavicular ligament, and an interclavicular ligament. The strongest bond, however, holding the bones in apposition is the rhomboid or costo-clavicular ligament. This structure is short and strong, about one inch in breadth, and the centre of it is about one inch from the inner end of the clavicle, and its fibres pass downwards and inwards to the first rib or its cartilage. The sterno-cleido-mastoid muscle attaches to the anterior surface of the inner end of the clavicle.

An epitome of the opinions of some prominent surgical authors on the causation of this dislocation will show the arguments present in my mind when advising the treatment. Erichsen states that it is caused by blows on the shoulder, bending the shoulder forcibly back, or by violence to the elbow while the arm is raised from the side, and occurs spontaneously sometimes in lateral curvature of the spine. It is reduced by pulling the shoulder outwards and backwards while the elbow is in front of the mid-lateral line. There is a tendency to dislocate again. To lessen this tendency he uses a figure-of-eight bandage as in fracture of the clavicle to draw the shoulders well back and a large pad is

[1] A paper read before the Owen Sound Medical Society, Owen Sound, Canada.

placed between the shoulders behind and a pad also over the dislocated head of the bone.

Rose and Carless state that the dislocation is due to violence applied to the front of the acromial end. They advise a figure-of-eight bandage, with a pad in the axilla and one over the sternal end of the bone, and rest in bed.

Duncan Eve, in the Reference Handbook of the Medical Sciences, states that of 497 cases of dislocations particularised at the Hôtel Dieu, Paris, the humerus was dislocated 321 times, the femur 34 times, the clavicle 33 times, the elbow 26, the thumb 17, the wrist 13, and each of the other bones less than 10. Professor Hamilton, in his classical work on dislocations, states that he has seen 57 cases of dislocations of the clavicle, 13 of which were at the sternal end, and 11 of these were forward dislocations of this end, and in not one of the 11 was the treatment successful in preventing an easy recurrence. The sternal end is usually thrown forward by a fall on the shoulder, front or outside, by pressure and leverage. Pain and embarrassment in the use of the arm follow. Eve, too, states that it is difficult, if not impossible, to maintain in position after reduction. Stimson, like Hamilton, is equally unfavourable in his prognosis. Wharton and Curtis say that it is unfavourable as to complete correction. Compression over the head of the bone and a figure-of-eight bandage, Récamier's dressing for fracture of the clavicle, Sir Astley Cooper's brace apparatus, plaster-of Paris apparatus, decubitus for six or eight weeks, have all been advised, tried, and failed. Eve personally favours a carefully applied figure-of-eight bandage, with compression over the head of the bone, to be maintained for six or eight weeks with the elbow secured in proper position by means of a sling and bandage confining the arm to the chest.

Von Bergmann finds this dislocation to be 1·5 per cent. of all dislocations and to be caused by a blow on the shoulder. The deformity, he says, is rarely completely reduced and retention is rarely successful, regardless of the kind of splint or support used. He advises rubber plates over the joint, fastened down by straps, a figure-of-eight bandage, plaster-of-Paris apparatus, injection of alcohol around the joint, König's suturing of the capsule, or Gersuny's transplantation of the tendon of the sterno-cleido mastoid.

Cheyne and Burghard state that this dislocation results from severe violence to the point of the shoulder, backwards in direction, or forwards or downwards. To reduce it the surgeon should put his knee between the patient's shoulders and pull the shoulders back and press the sternal end in; an anæsthetic is generally advisable. It is often a matter of the greatest difficulty to keep it there and a great deal of care is necessary to prevent recurrence. The shoulders should be braced back as for fracture of the clavicle with handkerchiefs and the elbow supported and brought well forward with strapping.

Warren and Gould point out that the joint owes its security to the curves of the clavicle, mobility of the scapula, and play of the acromio-clavicular joint, the sterno-mastoid and pectoralis major tendons adding to the joint ligaments, the costo-clavicular ligament, and the inter-articular fibro-cartilage. Out of 812 dislocations 21 (or 2·58 per cent.) were anterior dislocations of the sternal end of the clavicle according to the St. Thomas's Hospital Reports. Out of 400 dislocations six (or 1·5 per cent.) were of this class according to Krönlein's statistics. It is caused almost invariably by indirect violence to the shoulder, also by muscular action, as in swimming. As to prognosis, though easy of reduction, it can rarely be kept in position and more or less deformity results. They advise a pad in the axilla, plaster-of-Paris apparatus, or the figure-of-eight bandage, and the recumbent position is desirable for at least five or six weeks.

The patient in this case, a girl, aged 18 years, was first seen by me on Dec. 4th, 1905, in consultation with Dr. Danard of Owen Sound. Her trouble was that the sternal ends of both clavicles would so easily dislocate that the performance of ordinary household duties, like pumping water, hanging out clothes, practising music, &c., was impossible. Any movement that threw the shoulders backward and upwards produced the dislocations. She voluntarily dislocated one of the joints in the office for us. When dislocated she was in considerable pain and there was, of course, entire loss of function then of the whole arm. A little manœuvre and pressure and the head of the bone popped in again to its proper place. This had been going on for about five years, a disheartening condition that so reacted on her physically as to produce considerable anæmia and poor appetite and debility.

As to the measures previously employed in her case, her father writes me as follows: "The following remedies were tried but without success: (*a*) the use of shoulder-straps by pressure to keep the clavicles in position, but the effect was to produce dislocation and continue it until the straps were removed. We gave up the use of the straps after a week's trial. (*b*) A local blacksmith under the direction of the family physician made a steel spring fitting into the corset behind, coming over the shoulder and by means of a wooden button and spring pressing on the left clavicular joint. After two weeks this was abandoned. (*c*) A plaster cast was made of her bust and a poroplastic jacket was moulded from the cast with steel springs pressing both joints into position and keeping them there. In a few months ulceration began under the springs. This was somewhat removed by the use of rubber cushions between the springs and the body. She continued to wear the jacket for one year and six months when the family physician decided to discontinue using it. Other remedies proposed but not adopted on proper advice were to fasten the joints with silver wire, to fasten with screws, to pad under the arms and hold the arms back for several months," and I might add, to shorten and suture the anterior ligament of the joint.

When examining this young lady I was struck with the evidence of strength in the joint; it went out with a vicious snap and in again with a quick snap as if strong but overcome with a stronger force. Yet no great effort was being used in producing the dislocation. I concluded it was leverage that was doing it and decided that to spoil the lever would be good treatment. Her clavicles were uncommonly straight, not having that useful but unsightly anterior curve at their inner end. The fulcrum of the lever was evidently the first rib right under the clavicle at the location of the rhomboid ligament, so that when the shoulders went back the sternal end of the clavicle was levered forward. Dr. Danard and I concurred in advising her and her father to allow us to break both her clavicles at the fulcrum point and then to force them to heal with an anterior curve or angle at that point. They consented and on March 6th, 1906, at the Owen Sound Hospital, Dr. Danard assisting and Dr. Cowper giving chloroform, I sawed nearly through each clavicle at a point one inch from the inner end so as to be about the middle of the costo-clavicular or rhomboid ligament which had half its fibres thus attached to each fragment, and bending back the shoulders broke the bones through. It was now impossible to produce dislocation, as we tried it on the table. The incisions were then sewed up and both healed by first intention. The shoulders were held back by figure-of-eight bandages and plaster-of-Paris dressings *in the utmost of the position that before this used to produce dislocation*, so that they healed with a considerable angle at the point of fracture. She was kept in bed four weeks.

As to the result I will again copy from a letter of her father dated May 15th, 1907, one year and two months after the treatment. "Since the operation her general health has been better than for fifteen years back. Before the operation she was usually sick, depressed, without appetite, and suffering from severe headache. She has none of these symptoms now. The right clavicle has never been dislocated since the operation. The left did dislocate two or three times immediately on leaving the hospital; twice at home since then; and latterly three partial dislocations—that is, the clavicle did not come out of joint entirely. The last of these took place on the 21st of Sept., 1906, eight months ago. Since then there has been no dislocation of either clavicle. She can now do any domestic work without pain or inconvenience—as pumping water (which she could not do for the last five and a half years); scrub and sweep floors; do ironing; make beds; wash clothes and put clothes on the line; sew; practise music on the piano; comb her own hair and dress. These could not be done by her formerly, or else caused her much suffering. The operation has been a complete success." In regard to the dislocations that occurred on the left side after the operation, I predicted to him that these would cease as soon as the provisional callus on the under side of the clavicle should be absorbed.

This little operation of fracturing the clavicle for dislocation of its sternal end is, I believe, an entirely new idea in the treatment of this disease. I have seen no suggestion of it in any treatise, text, paper, or discussion. It is a valuable addition to our resources in handling this distressing condition, a condition the treatment for which has resulted in failure in from 75 to 100 per cent. of the cases recorded. The good result arising from this operation is caused by the

increased curve given to the clavicle at the point where it arches over the first rib, making it no longer possible, after the callus leaves, for the clavicle to lever on the rib; or is caused by the increased tension given to the rhomboid ligament by the new shape of the clavicle; or, more likely, the good result is due to both causes combined.

Owen Sound, Ontario.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### HYPERTROPHY OF THE URINARY BLADDER IN A WOMAN WITH AN OVARIAN CYST.

BY JAMES OLIVER, M.D. EDIN., F.R.S. EDIN.,
PHYSICIAN TO THE HOSPITAL FOR WOMEN, SOHO-SQUARE, LONDON, W.

THE patient, aged 44 years, a widow, was the mother of two children, and the last child was born 23 years ago. Menstruation had recurred regularly and the monthly discharge was of the usual amount. About five months previously to seeking treatment the patient remarked that she had some difficulty in passing urine and this difficulty had been noted more or less ever since. It had never been necessary for her to have the urine drawn off. For a fortnight before I saw her she had observed that her abdomen was increasing in size and it was on account of this that she sought advice. She had complained of no pain practically.

*Physical signs.*—The anterior abdominal wall was pushed markedly forward by a large globular and cystic swelling which was located centrally and extended out of the pelvis. The summit of this swelling was felt two inches above the umbilicus. It was not in the slightest degree tender to the touch. At this stage I passed the catheter and drew off 75 ounces of urine. The patient alleged that she had passed a good quantity of urine only half an hour before seeing me. After emptying the bladder by the catheter the following physical signs were noted. The abdominal swelling previously referred to had disappeared. Palpation detected a small globular swelling in the right iliac region and a small, somewhat flat and firm swelling in the left iliac region.

*Vaginal examination.*—The posterior vaginal wall was thrust markedly forward by a firm swelling, the lower border of which was felt just within the entrance to the vagina. This swelling appeared to be continuous with the two iliac swellings. The cervix uteri was located high and was reached with difficulty. The body of the uterus could not be clearly defined. I came to the conclusion that the tumour was probably an anomalous fibroid of the uterus and advised its removal.

*Operation.*—On opening the abdomen mesially the bladder was found to be incorporated with the anterior abdominal wall from the pelvis to the level of a spot located midway between the pubes and the umbilicus. The summit of the bladder was located two inches higher. The bladder was so enormously thickened that grasped between the fingers it felt like a uterus and altogether it was rather larger than a normal adult uterus. On exploring the pelvis I detected a swelling of the size of a large cocoanut firmly fixed in Douglas's pouch. On separating the adhesions the tumour, which proved to be a cyst of the left ovary, burst. On account of the bladder it was awkward to transfix and ligature the left mesovarium. The right ovary was healthy. The uterus, which was of a normal size, could not be dragged higher than a spot about the level of the middle of the bladder.

On referring to hypertrophy of the bladder Hunter states that "in consequence of obstruction to the passage of urine, the bladder having more to do than common is almost in a constant state of irritation and action; by which, according to a property in all muscles, it becomes stronger and stronger in its muscular coat; and I suspect that this disposition to become stronger from repeated action is greater in the involuntary muscles than the voluntary; and the reason why it should be so is, I think, very evident; for, in the involuntary muscles the power should be in all cases capable of overcoming the resistance, as the power is always performing some natural and necessary action." It is very evident that Hunter and others since his time believe that hypertrophy of the urinary bladder can only result from some obstruction at the neck of the bladder or in the urethra. In the case which I have just recorded there was no evidence of any obstruction at the neck of the bladder or in the urethra. A No. 10 catheter was passed easily into the bladder. The resulting hypertrophy was no doubt connected with the way in which the bladder was incorporated with the anterior abdominal wall, and although the wall of the viscus was enormously thickened the expulsive power of the organ had not been correlatively increased. The association with an ovarian cyst was probably a mere coincidence and the cyst was probably not accountable for the hypertrophy of the bladder. In some cases this disorder may, in my opinion, be due to disease of the viscus itself.

Gordon-square, W.C.

### HYDRONEPHROSIS OF HORSESHOE KIDNEY; NEPHRECTOMY; RECOVERY.

BY W. GIFFORD NASH, F.R.C.S. ENG.

A FEMALE, aged 16 months, was admitted into Bedford County Hospital on Oct. 23rd, 1906, with a history that six months previously her mother had noticed a lump of the size of a hen's egg in the left half of the abdomen, which had gradually increased without in any way affecting the infant's health. On examination the child was found to be well nourished and looked fairly healthy. In the left half of the abdomen a rounded swelling of about the size of a cocoanut could be felt. This fluctuated, felt elastic, and was moveable in all directions. It appeared to be attached to the left kidney by a sort of neck and had no pelvic connexions. It was not tender on manipulation. The right kidney could not be felt. Micturition was normal. The urine had a specific gravity of 1020, was faintly acid, and did not contain any albumin.

*Operation.*—On Oct. 30th a vertical incision was made over the front of the swelling and then it was seen to be a retro-peritoneal cyst arising from the left renal region. The peritoneum was closed and another incision was made at right angles to the first. A trocar was inserted and about half a pint of clear fluid was evacuated. The cyst was drawn up and with it the kidney, which was found to be the left half of a horseshoe kidney. The ureter was first tied and divided. At the junction of the two halves of the horseshoe kidney a white band could be seen. An incision was made through this and the cut capsule of the right kidney was united with catgut sutures. Lastly, the renal vessels which were abnormal were tied and the left half of the kidney was removed. The hydronephrosis chiefly consisted of a dilatation of the renal pelvis. The ureter was not dilated. A drain was inserted and the wound was closed. The fluid from the hydronephrosis had a specific gravity of 1010, was alkaline, and contained 0·1 per cent. of urea. The child made a good recovery, but owing to an attack of varicella remained in hospital until Dec. 8th. She has remained in good health.

*Remarks.*—This case is of interest for the following reasons: 1. The two kidneys were fused in the form of a horseshoe. Morris states that this malformation was found in 19 out of 18 244 cases—i.e., about once in a thousand. 2. The fused kidneys lay at a lower level than the normal kidneys. 3. The left half was hydronephrotic. The dilatation was confined to the pelvis of the kidney and appeared to be due to the angle at which the ureter entered it. 4. Nephrectomy of the left half of the horseshoe kidney was performed. Morris mentions the fact that a horseshoe kidney may be hydronephrotic but does not mention any case of nephrectomy for this cause. 5. The age of the infant was only 16 months.

Bedford.

### NOTES ON A CASE OF RUPTURED UTERUS.

BY JOHN H. TONKING, M.B. LOND.

THE rarity of rupture of the uterus in general practice induces me to publish this case. Out of over 2000 labours this is the first case that I have seen. It therefore follows that the experience of the individual practitioner in such cases must be limited. The want of definite rules by authorities places a large margin of responsibility on the medical attendant. In this case the uterus was removed

chiefly because of the fear of infection and also because hæmorrhage was going on in the pelvis. The circumstances in which the rupture occurred were such as to make infection almost certain. The cottage was dirty, there were no towels, and there was only a limited supply of hot water. On this account neither the hand of the accoucheur nor the vulva of the patient was in an ideally aseptic condition.

At 4 P.M. on July 5th, 1907, my partner, Dr. W. Blackwood, was urgently summoned to a multipara, aged 32 years, and living at a distance of three miles. The baby had been born one hour or more with the aid of the county nurse but the placenta was retained. On introducing his hand into the uterus through a rather contracted os Dr. Blackwood found to his horror that his hand was in contact with the intestines. After removing the placenta and giving ergot—the hæmorrhage not being excessive—he had the patient removed by ambulance to the Redruth Women's Hospital. At 7 P.M. I held a consultation with Dr. Frank Hichens of Redruth, when it was decided to remove the uterus. An injection of $\frac{1}{30}$th of a grain of strychnine was given. On opening the abdomen I found that the pelvis was full of clots and that a large rent extended from the cervix through the right broad ligament, passing in front of the uterine vessels. The ovarian arteries were tied on the uterine side to leave both ovaries and after ligature of the uterine arteries the uterus was removed above the cervix. A roll of gauze for drainage was inserted into the cervical rent to Douglas's pouch.

The patient's temperature was almost continuously between 99° and 101° F. from July 5th to 13th, the highest points recorded being 102·4° on the 10th, when there was a rigor lasting 15 minutes, and for the second time 102·4° on the 13th. From July 13th to August 8th it was usually between 98·4° and 100°. The gauze drain was removed on the 12th and the stitches were removed partly on the 17th and partly on the 19th. On August 3rd the wound was healed. Enemata containing two drachms of oil of turpentine were frequently administered during the progress of the case and small doses of sulphate of magnesium were also given by the mouth.

The patient's convalescence has been interrupted by vesical pain, doubtless due to adhesions, as they are rapidly improving and there is no cystitis. I fear if the course sometimes adopted of gauze-plugging the rent had been adopted the patient would have succumbed to septic peritonitis.

Camborne, Cornwall.

# Medical Societies.

## ROYAL ACADEMY OF MEDICINE IN IRELAND.

### SECTION OF SURGERY.

*Tuberculosis Treated by Tuberculin.—Ureteral Calculus.*

A MEETING of this section was held on March 27th, Sir HENRY R. SWANZY, the President, being in the chair.

Dr. FRANK J. DUNNE exhibited two patients who had suffered from Tuberculous Disease of Joints and had been treated by Denys's tuberculin. The first patient was a man, aged 39 years, who had been affected with a tuberculous ulcer of the lower third of the leg and ankle-joint for five years, as well as with several sinuses on both arms. An x ray photograph showed extensive matting and pulping of the bones of the tarsus. All discharge ceased early in September, 1907, and the patient had good use of his foot and both arms. The second patient, a girl, aged 20 years, suffered from tuberculous disease in the wrist for about three years and in both ankles for over two years. The wrist was scraped with little improvement. When treatment commenced this patient was very much run down. Her temperature varied from 100° to 102° F., her pulse-rate was 100, and her weight was 6 stones 3 pounds. All discharge ceased early in June and her temperature had not since then been above normal. An x ray photograph showed matting and pulping of every bone in the wrist-joint, yet the girl had good use of the hand and could walk perfectly. In both these cases treatment lasted for about a year. The man gained 1 stone 9 pounds in weight and the girl 3 stones 6 pounds. In both cases about 50 injections were given.—The PRESIDENT said that he had only used Koch's tuberculin T.R. It now appeared that Denys's tuberculin was a very effective preparation.—Mr. JOHN LENTAIGNE said that he had recently had a large number of cases of complete recovery from tuberculous disease, the time of which was measured by months, not by years, as in the cases exhibited. He appreciated the good work which had been accomplished by Dr. Dunne but he believed that the results would have been more quickly attained by surgical assistance. In assisting surgical treatment by tuberculin he had found that Koch's tuberculin had not to be given so often as Denys's. Perfect recovery had been obtained by gauging the injections by the opsonic index but it was a difficult method.—Professor E. J. MCWEENEY said that the method for obtaining Denys's and Koch's tuberculin was the same up to a certain stage. Both grew the tubercle bacillus on the surface of a broth containing 5 per cent. of glycerine and filtered off the bacilli. But Koch's method from that point consisted in evaporating the liquor of the culture to one-fifth of its original bulk, while Denys used it without reducing it in volume. The difference, then, was that Denys's tuberculin contained presumably toxic and presumably therapeutic materials which were easily destructible; these would be destroyed by boiling in Koch's tuberculin. The latter was more concentrated than Denys's but he was not aware of any difference in the dosage. Nowadays the tendency was to have a small dosage and to avoid producing a reaction in a rise of temperature; in Koch's old system a rise was considered necessary. He had lately been working with tuberculin in obtaining the ophthalmo-reaction. He used Koch's old tuberculin diluted to the strength of 2 per cent. This provided material for hundreds of patients at a cost of 8*s.* 6*d.* One drop produced the desired result. Contemporaneously with this he used the cutaneous reaction by inoculating both arms, the right arm with a drop of 25 per cent. of the old tuberculin and the left arm with 3 per cent. boric acid solution. In a couple of cases he thought that he noticed a marked therapeutic result from the method in the absorption of a pleural effusion and in two other cases there was a distinct improvement in the symptoms. As the result of his experience of the opsonic index he stated deliberately that, in his hands at least, he had never been able to convince himself that the errors of experiment did not outweigh the very slight differences from the normal obtained by means of the method, and he did not think he would attach any importance to opsonic indices obtained otherwise than by Sir A. E. Wright himself, his immediate assistants, or those who had worked for a prolonged period under his immediate supervision. He had treated a few cases in private for tuberculous glands in the neck and he did so deliberately without estimating the opsonic index. After the injections of bacillary emulsion the glands had a tendency to swell and afterwards they rapidly underwent diminution and practically disappeared.—Dr. DUNNE, in reply, intimated that he had too many calls on his time and too little assistance to be able to use the opsonic index. He was guided as to the dosage by the effect of the injection on the patient. That might be a temperature reaction or a local reaction, but as much as possible he avoided a temperature reaction. If there was marked reaction he either left a longer interval or reduced the dose. He quite agreed that operative treatment would in some cases materially hasten recovery. He had about 90 cases under tuberculin treatment and he found that he got the best results with small doses at short intervals. After three and a half years of using tuberculin he was firmly convinced that, so far as their present knowledge went, there was no treatment anything like equal to it for tuberculous affections, no matter where situated.

Mr. C. ARTHUR K. BALL read a paper on the Diagnosis of Impacted Calculus in the Ureter and gave an account of a case in which an erroneous diagnosis of impacted calculus in the ureter was made even with the assistance of an excellent radiograph taken with a shadowgraph bougie *in situ*. The case was that of a man who had been operated on elsewhere six months previously for renal calculus. Since the operation all the urine from that kidney came through a fistula in the loin. A shadow by the x rays of a supposed stone was found, apparently in the ureter; this was verified by several radiographs and the relation to the ureter established by use of a shadowgraph bougie. The ureter was exposed by an extra-peritoneal iliac incision but no stone was present. The

ureter was dilated and the final result was satisfactory. The origin of the shadow, which is still present, has not been established. Mr. Ball said the mistake could only have been avoided by a stereoscopic radiograph taken with a shadow-graph bougie *in situ* and that in future he intended to make use of this method in all similar cases.—Mr. WILLIAM I. WHEELER said that the case had been formerly in his hands and two x ray photographs verified the diagnosis of renal calculus. After the stones were removed a catheter was passed into the bladder and every care was taken to see that no calculus remained in the ureter.

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FORFARSHIRE MEDICAL ASSOCIATION.—A meeting of this society was held on April 3rd, Dr. J. Constable (Leuchars) being in the chair.—Mr. D. M. Greig showed a case of Sporadic Cretinism in a female, aged 11 years. The case was typical of the condition and presented that peculiar and characteristic physiognomy of apathy, with heavy stunted body, bent limbs, and awkward waddling gait. The head was unusually well covered with hair and there were well-marked supraclavicular pads. He also showed a woman after two operations of Partial Craniectomy for Osteitis, who suffered before operation from exceptionally severe head-ache, evidently caused by the pressure of the thickened bone, the removal of which gave relief. The pieces of the bone removed and stereoscopic photographs of the patient before and after operation were exhibited. He then showed two cases after Nerve Suture, the first after primary suture of the median nerve, cut at the wrist, and the other after secondary suture of the ulnar nerve, cut at the elbow.—Dr. A. McGillivray showed a man who, while at work in a foundry, received an injury to his eye, causing a punctured wound of the cornea which produced a traumatic cataract. When the lens was removed it was seen that the foreign body, a small piece of steel, was implanted in the optic disc.—Mr. A. Don showed a case of Early Aortic Aneurysm with an x ray photograph of the condition. The outstanding clinical feature of the case was the loudness of the murmur which could be easily heard without the aid of a stethoscope while standing beside the patient.—Dr. W. E. Foggie showed a boy with a Patch of Favus in the Right Axilla. There was no sign of the disease on the head or on any other part of the body.—Mr. Greig exhibited a pelvis from an adult female showing Double Congenital Dislocation of the Hip. The acetabula were shallow and triangular in shape and there was a depression in the right ilium caused by the head of the femur. Many years ago the case had been diagnosed as osteo-malacia and had been treated by removal of both ovaries. This was in pre-x-rays days, with the advent of which the true condition of affairs was discovered. He also exhibited a Skull with Synostosis between the Atlas and the Basioccipital.—Dr. McGillivray showed a specimen of an Enucleated Eye after Penetration by a Lead Pellet, which was implanted in the intravaginal sheath of the optic nerve just behind the eyeball.—Dr. C. Kerr showed a Heart with Congenital Malformation from a child, aged 12 weeks. The usual symptoms were present in life. The heart consisted of a greatly dilated right ventricle and auricle. The pulmonary artery was stenosed and almost obliterated; from it was seen arising the ductus arteriosus, evidently patent. The cusps of the pulmonary valve were represented by three minute nodules. The aorta arose from the right ventricle and also from what represented the left ventricle, a mere slit in the hypertrophied ventricular wall, which would contain no more than ten drops of blood. The mitral valve was present but in miniature, and the opening led into a small depression of the size of a split pea, evidently the left auricle, separated from the right auricle by a very thin perforated wall. The aortic and tricuspid valves were normal. To all intents and purposes the heart was a two-chambered one, the left side of the organ being crowded out of any useful existence.—Dr. R. C. Buist showed a Liver with Acute Yellow Atrophy from a case of eclampsia.—Dr. G. A. Pirie showed radiograms from a case of Œsophageal Stricture caused by an intrathoracic tumour, the condition being well demonstrated after the patient had partaken of a bismuth meal.—Professor E. Waymouth Reid gave a demonstration of Colour Photography as Applied to Medicine. He described the technique of the process and exhibited many beautiful slides of pathological, physiological, and botanical specimens, both macroscopic and microscopic.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 2nd, Dr. George Williamson, the President, being in the chair.—Dr. A. T. G. Beveridge described a case of Empyema and Gangrene of the Lung and demonstrated the patient. A preliminary exploratory puncture revealed the presence of pus in the pleural cavity. A rib was therefore resected and a large quantity of fœtid pus was evacuated with but little improvement in the condition of the patient. A fortnight later there was a severe hæmorrhage from the wound which ceased spontaneously. Three days subsequently a gangrenous slough of lung tissue of the size of a Brazil nut was expelled through the wound. The patient is now (three and a half months after the operation) in perfect health.—Dr. J. Mackenzie Booth showed a patient 13 years after tracheotomy for Laryngeal Stenosis. The stenosis was due to a cicatricial web in the plane of the vocal cords with a small opening in it of about the size of a crow quill. Tracheotomy had to be done hurriedly owing to collapse of the left lung. The patient shows well-marked signs of specific rhinitis with extension to the ears and consequent deafness. His voice is exceedingly husky and he suffers from considerable discomfort from the tracheal aperture.—Dr. John Gordon described a case of Severe Vesicular and Bullous Eruption resulting from the application of a proprietary ointment. He also read notes upon two cases in which the external application of Cantharides for Sciatica had been followed by severe renal symptoms resembling those of renal calculus. In the first case a cantharides plaster had been applied for from two to three hours without the production of redness or vesication upon two different occasions. Curiously enough the pain in each instance affected the kidney of the side opposite to the application. In the second case the symptoms followed the application of a proprietary preparation of cantharides and capsicine.—Mr. H. M. W. Gray and Dr. J. R. Levack exhibited lantern slides of skiagrams and of skiagraphic tracings illustrative of Mr. Gray's paper upon the Functions of the Stomach and the Operation of Gastro-enterostomy, published in THE LANCET of Feb. 22nd, p. 549. They also demonstrated by means of the x ray screen the stomach outlines of persons who had taken a meal mixed with carbonate of bismuth. Five cases were demonstrated in this manner—viz., three normal stomachs and two stomachs after gastro-enterostomy. They also showed lantern slides of skiagrams illustrating Beck's method of treating old-standing sinuses by the injection of a mixture of bismuth and vaseline. The slides, which included cases of psoas abscess and hip-joint disease, with perforation of the acetabulum, showed very clearly the manner in which the bismuth mixture mapped out the various recesses of the sinuses. Mr. Gray had formed a favourable opinion of this method of treatment.—Dr. W. I. Fortescue showed Skiagrams illustrating the method of "Plastic Radiography." From the original skiagram negative a transparency was prepared. The two plates were then superposed and a second transparency was printed off. The two transparencies were next superposed and a final print was taken. The method consisted essentially in heightening the lights and darkening the shadows, and the final print thus obtained displayed a certain amount of perspective. Dr. Fortescue did not think that the results were so trustworthy as those obtained by stereoscopic radiography.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 13th, Dr. J. Walker Downie, the President, being in the chair.—Dr. W. B. I. Pollock showed a case of Telangiectases of the Retinal Capillaries and Venous Radicles. Examination of the right eye showed a marked sclerosed condition of the branches of the superior retinal vein and groups of convoluted vessels. Four telangiectases were also seen. They had undergone no alteration during the past six months and on careful focussing the outline of small vessels could be made out.—Dr. J. Kerr Love reported a case of Aural Tuberculosis ending fatally. There had been an offensive discharge and facial paralysis had ensued. The mastoid process was filled with broken-down bone, granulation masses, and caseous material. Caseous glands in the neck were curetted. For a year the child remained well till symptoms pointing to meningitis developed—stupor, subfebrile temperature, fits, dilatation of the right pupil, and slow pulse. A loose fragment of bone was removed but there was no discharge. Coma deepened and the pulse and temperature returned to normal. The middle and posterior fossæ of the skull were opened on the possibility of there being an abscess to account

for the symptoms. Nothing was found and the child died. On post-mortem examination a lepto-meningitis at the base of the brain was found. A caseous nodule of the size of a pea was found in the anterior part of the pons on the left side. Another similar nodule was found on the right occipital lobe just under the pia mater. The extension was probably by the blood stream.—Dr. John Rowan showed a number of stereoscopic photographs illustrative of External Diseases of the Eye prepared by the Lumière colour process. He pointed out that by this means they had a valuable method of recording the different stages of many diseases, more especially those of the skin.—The President described, with stereoscopic photographs, a very large External Fibro-cellular Tumour of the Nose.—Dr. Carl H. Browning read a paper on the Treatment of Trypanosome Diseases by means of Atoxyl and its Derivatives. The strain of trypanosomes chiefly employed was nagana, which killed white mice in three days. The injection of the largest safe dose of atoxyl cured only 8 per cent. With acetyl-para-amidophenylarsenic acid (a derivative of atoxyl synthesised by Erhlich and Bertheim) over 93 per cent. were cured. Treatment was started 24 hours after inoculation. When only started 48 hours after, the atoxyl derivative must be given in repeated large doses. In advanced infections another method of treatment was by a combination of the most efficient drugs of different chemical types—e.g., acetyl-atoxyl plus trypan blue or by injection together with oral administration. The curative results are not due to an internal antisepsis in the ordinary sense of the term, as neither atoxyl nor trypan blue is trypanocidal in vitro. By treating infected animals with repeated small doses there was ultimately produced a trypanosome strain which was resistant to the largest doses of a drug of the same class. Thus an atoxyl-resistant strain was developed which could not be influenced by repeated large injections of the atoxyl derivative.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on April 10th, Dr. W. Langdon Brown, the President, being in the chair.—The President showed a man, aged 34 years, with a Right Subphrenic Abscess which he was coughing up through his lung. A skiagram showed a bulging up of the diaphragm on the right side, and the area of dulness changed on the patient changing his position. The character of the sputum was that of "anchovy sauce pus" and gave the reaction for bile.—Dr. Leonard Williams showed: 1. A man, aged 31 years, with well-marked persistent Cardiac Arrhythmia. There were systolic and diastolic murmurs at the apex and the arrhythmia was caused by the interference to the function of conductivity, probably due to degeneration of the auriculo-ventricular muscular bundle of His. 2. A man, aged 64 years, who complained of tingling in both hands. There was a systolic murmur at the base due to chronic aortitis, and both radial and brachial arteries were definitely hard and tortuous, so the arterio-sclerosis going on evidently caused the tingling.—Dr. T. Grainger Stewart showed a married woman, aged 32 years, who for the past three months complained of "pins and needles" down the inner side of the left arm and pain in the region of the left scapula. The left arm was weaker than the right and the muscles of the arm and the interossei were beginning to waste. She also had slight numbness and weakness of the left leg. The left pupil and the left palpebral fissure were smaller than on the right side. On examination there was complete loss of all forms of sensation along the inner side of the left arm and across the chest and back corresponding to the area supplied by the first, second, and third dorsal nerves. Both knee-jerks were active but the left one soon got exhausted. The signs and symptoms pointed to pressure on the left pyramidal tract and the lesion was probably an endothelioma inside the neural canal involving the posterior roots, more especially the first, second, and third dorsals.—Mr. A. J. Kendrew (for Dr. E. Cautley) showed: 1. A woman, aged 66 years, with a Saccular Aneurysm of the Ascending Aorta. At the level of the second right interspace there were a patch of dulness, a well-marked thrill, and a loud systolic murmur. There was no difference in the voice, pupils, or pulses. 2. A man, aged 33 years, with an Aneurysm of the Ascending and Transverse Aorta. At the level of the second and third interspaces there were a patch of dulness and a loud diastolic aortic murmur. There were well-marked tracheal tugging and complete paralysis of the left vocal cord causing hoarseness and a "brassy cough." 3. A man, aged 49 years, with an Aneurysm of the Transverse and Descending Aorta. Systolic and diastolic murmurs were heard all over the præcordium. There was well-marked tracheal tugging but no paralysis of the vocal cords.—Dr. N. S. Finzi described the rapid cure of old-standing Varicose Leg Ulcers by the driving in of zinc ions with the galvanic current.—The following office-bearers were elected for the session 1908–09: President: Dr. A. Morison. Honorary secretary: Dr. David Ross. Honorary treasurer and curator: Dr. B. G. Morison. Council: Dr. W. Langdon Brown, Dr. J. R. T. Conner, Dr. Leslie Durno, Mr. G. Angus Hunt, and Mr. W. Campbell M'Donnell.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of the Pathological Section of this society was held on April 2nd, Mr. T. H. Bickerton, the President, being in the chair.—Dr. A. Nimmo Walker and Dr. W. L. Hawksley showed Films from a Fatal Case of Diphtheria of the Conjunctiva. The patient was a year old and death took place on the ninth day of the disease.—Mr. G. P. Newbolt showed a Section of a Tumour removed from a male, aged 50 years. The tumour began in the glands of the neck and grew on to the parotid gland. It had lasted two years. It appeared to be a sarcoma with large angular cells packed closely together without any visible stroma.—Mr. W. Thelwall Thomas and Dr. J. S. Rowlands showed: 1. Tumour of the Coccyx removed from a man, aged 45 years. The growth was firm and lobulated. Microscopically it consisted of spaces filled with large cells. It was probably associated with the post-anal gut. 2. Cylindrical-celled Carcinoma from the Humerus from a man, aged 53 years. It had caused spontaneous fracture. The primary source of the carcinoma could not be ascertained at present. 3. Early Tubercle of the Kidney removed from a patient, aged 28 years. The diagnosis rested on cystoscopic evidence and the presence of tubercle bacilli in the urine.—Dr. J. Owen showed: 1. A portion of Small Intestine with Multiple Diverticula. There were about a dozen in number, the largest capable of containing the whole thumb. They were situated close to the mesenteric attachment. The specimen was from a post-mortem examination of a man, aged 69 years, who had died from cerebral hæmorrhage. 2. A Heart from a child, aged four years. The pulmonary orifice was reduced in size and there were a patent foramen ovale and deficiency of the upper part of the interventricular septum.—Dr. Rowlands described an Analysis of 26 Renal Calculi. Only three contained uric acid. The others consisted of calcium oxalate. The external appearances were no guide to the chemical nature of the calculi. The calculi had been removed by Mr. Thelwall Thomas and the analysis carried out at his suggestion.—Dr. O. T. Williams read a paper on the Etiology of Appendicitis. He showed that appendix concretions were largely composed of calcium and saturated fatty acids, were concentrically laminated, and therefore formed *in situ*. The normal secretion of the appendix contained the same fatty acids as found in the concretions. The micro-chemical nature of the changes in the appendix mucous membrane was described. In cases of appendicitis there was even in children a large deposit of calcium soaps in the mucosa, in many cases almost a complete ring being laid down. This was quite sufficient to cut off the nutritive supply of the mucous membrane and thus to predispose to the invasion by micro-organisms. Slight amounts of free fatty acid were found in the submucosa and also to some extent the formation of calcium soaps in the mucous membrane. The relationship of the nature of the fat in the diet to this disease was discussed.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on April 1st, Dr. A. T. Wilkinson, the President, being in the chair.—Dr. A. A. Mumford related a series of cases illustrating the Influence upon the Growth of Children exerted by a Defective Metabolism of Fat when this was prolonged over a series of years. The condition described was associated with chronic diarrhœa and with absence or alteration of the pigment of the fæces (acholia). There was no concomitant jaundice or glycosuria. In the cases described improvement or cure resulted from the administration of pancreatin and the consequent assimilation of fat was secured after a treatment of coincident duodenal catarrh by mercurials, &c., had failed. Growth was resumed after it had been arrested for many years and at least in one case permanent cure resulted. After the cases had been described the relation of the condition to rickets and to interstitial pancreatitis was considered.—Dr. J. Dixon Mann described two ways in which, in the absence of jaundice, the fæces might be colourless for a considerable time—from excess of

fat and from over-reduction of the bile pigment. The fat cleavage in the intestine might be defective owing to absence of the pancreatic juice. It might also be impaired by chronic intestinal catarrh. In such cases the fæcal fat might reach from 50 to 80 per cent. When the amount of fat was very excessive the pigment present in the motions was obscured, their appearance then being quite pale, or they might even be devoid of all colour. In other cases the colourless stools were due to the bilirubin having undergone excessive reduction on account of inordinate putrefactive processes in the upper part of the large intestine. Under normal conditions the bilirubin was reduced by the intestinal bacteria to urobilin, to which the normal colour of the fæces was due; if the reduction was carried beyond this stage the colourless chromogen, urobilinogen, was produced and the fæces were then deprived of their natural pigment. Such changes occurred in chronic intestinal catarrh, in tuberculosis of the abdominal viscera, in septic diseases, and also in some blood diseases.—Mr. M. J. Chevers read a paper on the Etiology of the Psoriatic and Allied Conditions. The paper gave several arguments in favour of the neuropathic etiology of psoriasis, eczema, pemphigus, and angio-neurotic œdema, and explained that the exudation in the latter three as compared to the dry scaliness of psoriasis depended on the individual peculiarity with respect to the permeability of the capillary walls, the degree of coagulability of the blood, and the variability of skin elasticity. Mr. Chevers thought that these troubles should not be classified as diseases originating in the skin but as objective symptoms of general functional disturbance.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 8th, Dr. H. Waldo, the President, being in the chair.—Mr. W. Sampson Handley gave an address on Breast Cancer in Relation to the Lymphatic System, in which he propounded his views on the spread of cancer and explained his reasons for believing that secondary deposits were not the result of haphazard lodging of the cancerous emboli, but were subject to definite laws which he summed up under the permeation theory of dissemination by the lymphatics. He also described his method of treating lymphatic œdema by insertion of silk threads subcutaneously.—Mr. E. W. Hey Groves, in discussing the address, inquired whether there was any method by which the microscopic growing edge of the outward spreading lymphatic permeation of cancer cells could be determined or approximately located during life.—Mr. W. Roger Williams subjected to critical examination Mr. Handley's proposal to substitute "lymphatic permeation" for embolism as a general theory of dissemination. He considered that such a claim went far beyond what was justified by the ascertained facts. Restricted to local dissemination he thought that Mr. Handley might fairly claim to have captured most of the field for "lymphatic permeation"; and it was in this direction that valuable permanent results had been obtained. With regard to lymph gland dissemination and metastasis Mr. Williams thought that the facts adduced by Mr. Handley in favour of "lymphatic permeation" were far from conclusive; while in favour of embolism there was an immense mass of detailed evidence the cumulative effect of which was overwhelming.—Mr. T. Carwardine spoke of the practical surgical application of Mr. Handley's researches and asked whether in those cases of mammary cancer in which there was obvious enlargement of the supraclavicular glands there was also direct epigastric permeation into the upper abdomen, and, if so, which was likely to be the more advanced. For it seemed to him that operation might be contra-indicated by the presence of secondary glands in the supraclavicular fossa.—In reply Mr. Handley, among other remarks, said that he did not recognise a difference between local spread and metastasis, and brought forward the suggestion of "trans-cœlomic implantation" to explain some instances of remote metastasis. He did not deny that occasionally cancerous embolism might occur, but he was anxious to displace this as the chief part for metastases.

THE APPOINTMENT OF DR. J. T. C. NASH AS MEDICAL OFFICER OF HEALTH FOR THE COUNTY OF NORFOLK.—Dr. J. T. C. Nash, medical officer of health of the borough of Southend-on-Sea, whose eccentric treatment by his authority was recently noticed in our columns, has been appointed first medical officer of health for the county of Norfolk, where, we feel assured, his energy in preserving the public health and in forwarding the aims of the county council in this direction will be well employed.

# Reviews and Notices of Books.

*The Medical and Surgical Knowledge of William Shakespere.* With Explanatory Notes. By JOHN W. WAINWRIGHT, M.D. New York: Published by the Author. 1907. Pp. 78.

American and Canadian literary men have ever been ardent admirers of Shakespeare and have frequently testified to this admiration in a practical and substantial manner. The works of Shakespeare have been discussed from almost every conceivable standpoint and many works have appeared dealing with his medical and surgical knowledge, notably one by Moyes first published in 1896. A student, nay, even a casual reader, of Shakespeare cannot fail to be struck with his numerous references to matters medical and surgical, displaying indeed a more or less intimate acquaintance with the medical lore of the times in which he lived. Of course, as is rightly pointed out by the author, Shakespeare wrote with a surprising amount of knowledge upon a variety of subjects of a widely different nature. He shows a wide acquaintance with law and theology, as well as mathematics, astronomy, and literature, and was mentally master of all time. It is not then a matter for much wonder that his writings in regard to medicine and surgery are distinguished by a similar far-reaching knowledge. All references relating to medicine are not given by Dr. Wainwright but only those which have appeared to him to possess the most interest. In those instances in which the meaning is obscure the doubtful points are elucidated by notes. The quotations are well chosen and the accompanying notes are in general useful. The work as a whole is instructive and ingenious and bears obvious marks of having been put together by a careful student of Shakespeare who at the same time was versed in medical and surgical affairs.

We must, however, take exception to Dr. Wainwright's note (p. 18) on the well-known passage from King Henry IV., Act 1, Scene 2, in which Falstaff asks the page, "What said the doctor to my water?" to which the page replies, "He said, Sir, the water itself was a good healthy water; but for the party that owned it he might have more diseases than he knew for." Here Dr. Wainwright says, "The value of urinary analysis was known centuries before Shakespeare's time." Analysis, however—that is to say, chemical analysis, or the separating the constituents, normal or abnormal—except by simple sedimentation of urine, was not known or practised until after Shakespeare's time. True, mediæval and sixteenth and seventeenth century books upon medicine are full of directions for the examination of the urine by *inspection*. For instance, the celebrated ninth-century writer, Isaac, whose works were translated from the Arabic into Latin by Constantinus Africanus (*circa* 1050), has left us a section, De Urinis, in which all kinds of indications are to be drawn from the colour, the smell, the taste, the "complexio," and other characteristics. A fine edition of Constantinus's translation was printed at Lyons in 1515. He, or Isaac, mentions heating the urine. To come down to later times, Willis (1684) knew that turbid urines sometimes cleared up on heating and sometimes not, but analysis in any modern sense was of still later date.

Moreover, the delightful *Cautelae Medicorum* given by Arnold de Villa Nova, *circa* 1300 (Basle edition, 1585), p. 1454, show that the mediæval physician was quite aware that inspection did not give much information and that a judicious questioning was much more valuable. To come down some 700 years later than Isaac, Robert Recorde in 1599 printed a curious little book called "The Judiciall of Urine," which is mainly borrowed from mediæval writers and gives much the same instructions for the inspection. There

are also many seventeenth-century Dutch pictures showing the medical man of the time looking at the urine in the urinal. Dr. J. Tyson [1] of Pennsylvania says that albumin, or rather a substance coagulable by heat, was first discovered in the urine by Cotugno in 1770. On p. 6 Dr. Wainwright refers to "the red plague" or "the red pestilence" in annotating quotations from *Coriolanus* and *The Tempest* as being typhus fever. This disease was said to have been brought home by the English garrison of Havre where it raged in 1563. It was often confounded with true plague but by those who knew better was called "febris purpurea."

The arrangement of the book is good, the quotations being grouped under the headings of Medicine, Surgery, Mental and Nervous Diseases, Obstetrics and Midwifery, Therapeutics, Pharmacy and Toxicology, Anatomy, Physiology, Hygiene and Dietetics, Ethics, and Medical Jurisprudence. The volume is beautifully printed and bound and has as the frontispiece a photogravure from the portrait which was the original of the Droeshout engraving in the first folio edition, published by Heming and Condell, two of Shakespeare's theatrical colleagues. It is interesting to note that the quotations given are taken from an edition in the possession of Dr. Wainwright, printed in 1796 by Bellamy and Roberts, London, now out of print, and from a more modern one by Charles Knight.

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*Text-book of Ophthalmology.* By Dr. ERNST FUCHS, Professor of Ophthalmology in the University of Vienna. Authorised translation from the eleventh German edition, with numerous Additions, by ALEXANDER DUANE, M.D., Surgeon to the Ophthalmic and Aural Institute, New York. Third edition. With 441 illustrations. London and Philadelphia: J. B. Lippincot Company. 1908. Pp. 908. Price 25*s.* net.

WE have long held that Fuchs's "Text-book of Ophthalmology" is the best of the larger text-books and we have yet to discover adequate reason for changing our opinion. Its chief excellencies appear to us to consist in the extraordinary simplicity and lucidity of its style, the masterly grasp of the subject, and the admirable proportion which is maintained between the several parts. Professor Fuchs possesses in a marked degree the capacity to see a subject whole and to this are added an unusual skill in exposition and felicity in expression. More than in any other text-book of ophthalmology with which we are acquainted the subject is presented in a truly scientific manner upon a sure basis of pathology. The student is not embarrassed by bald statements of isolated facts. A clear conception of the diseased condition is conveyed by careful attention to the prominent pathological features and the appropriate treatment is presented as a logical deduction. The more recondite discussions are not ignored but are set in proper perspective by relegation to paragraphs printed in smaller type. In this manner the broad outline is sharply emphasised and the shades of opinion serve but to throw it into relief.

The third edition of the English translation retains the excellencies of its predecessors. Professor Fuchs has elaborated several of the sections, notably those on glaucoma and sympathetic ophthalmia. As in previous editions the translator has made considerable additions, easily recognisable by inclusion between brackets. Of these the more important deal with disturbances of motility and the correction of refraction, subjects which are certainly somewhat neglected by continental clinicians. He has also added many illustrations. The additions are, on the whole, judicious but they have undoubtedly reached the limit of expediency. Amongst the new illustrations are coloured drawings of fundus conditions; they are all borrowed from other sources and are not of outstanding merit. The absence of coloured plates has been a defect of this admirable work but if they are provided they should be worthy of their setting.

[1] Bright's Disease and Diabetes, London, Rebman, 1904.

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*Hospital Training-School Methods and the Head Nurse.* By CHARLOTTE A. AIKENS, late Director of the Sibley Memorial Hospital, Washington, D.C., &c. London and Philadelphia: W. B. Saunders Company. 1907. Pp. 267. Price 6*s.* 6*d.* net.

IN view of the numbers of nurses who yearly enter for training and of the importance of methodical arrangement for their instruction, it is surprising that more books dealing with methods of training have not appeared. There is perhaps a tendency to believe that the routine business of nursing can be picked up haphazard in the course of ward work and that instruction in the scientific principles underlying it is comparatively unimportant and can be inculcated in a few set lectures, probably given by a member of the hospital staff. That there are a good many problems involved in the arrangement of an ideal course of instruction for nurses will be apparent to the reader of the book before us, which is evidently written by one who has had practical experience in the matter and whose advice is well worth considering. Now and again in studying her instructions we are conscious that the American deal of a nurse is somewhat different from our own, the tendency being there, so far as we can judge, to throw more responsibility upon the nurse and to encourage her to act upon her own initiative more than is expected or appreciated in this country. Still, the author does not approve of nurses being compelled to "spend 24 class periods in a pathologic laboratory making a careful study of the more common pathogenic organisms, such as the tubercle bacillus, the pneumococci and gonococci, and the germs of typhoid fever, diphtheria, and tetanus, as one modern training school requires." She appears to think, however, that the nurse should be prepared to criticise a medical man's prescription if he orders too large a dose of a drug. On the whole, we find the advice given pre-eminently sane and helpful. Common sense and cleanliness and cookery are allowed to rank in importance before the theories of chemistry and bacteriology. The matter of the training of nurses is considered both from the point of view of the probationer and of the ward sister and matron and many sensible hints are given which may be commended to the attention even of the physicians and surgeons who lecture to nurses. Specimens of examination papers are given and also a scheme of instruction calculated for the different years of a nurse's training. Anecdotes illustrating "how not to do it" are also narrated. A valuable chapter points out the high qualifications demanded of a district nurse who has a much more difficult part to play than the nurse who does her work amid the conveniences of a well-equipped hospital. In short, we can heartily commend the book to the attention of all who have to do with the management and teaching of nurses as a mine of information and ideas which cannot be read without profit.

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*Essentials of Human Physiology.* By D. NOËL PATON, Professor of Physiology, University of Glasgow. Third edition. London and Edinburgh: William Green and Sons. 1907. Pp. 477. Price 12*s.* net.

THE original character of this text-book has been preserved. In the present edition several parts have been rewritten—for the second edition appeared in 1905—more especially dealing with the proteins, classified as simple, conjugate, and scleroproteids, to which about six pages are devoted in an introductory section on protoplasm, with references to more detailed treatment in the later part of the text; with Sherrington's work on the integrative action of the nervous system, and H. Head's investigations on cutaneous and deep sensibility. There are some other changes in connexion with the measurement of the arterial blood pressure in man and the newer

views on the digestion and absorption of proteins in the alimentary canal. In most other respects these "Essentials" are much the same as in the previous edition which was reviewed in THE LANCET of Oct. 21st, 1905, p. 1188. We shall only refer to the chief changes.

Some new illustrations and diagrams are introduced; some of the former are taken from Sherrington's work and one on neuro-muscular mechanisms in relation to reflex action is from McDougall's elementary work on psychology. The terminology as to reflex and other nervous actions adopted is that based on sensory surfaces as receptor fields, and so we have extero-ceptive stimuli which may be either noci-ceptive or non-injurious, intero-ceptive, and proprio-ceptive. There is a short account of Head's work on protopathic and epicritic sensibility which appeared in *Brain* in 1905.

About 35 pages are devoted to the master tissues (muscle and nerve) in contradistinction to the vegetative tissues (epithelium and connective tissue). In speaking of "heat production" (p. 42), we are told "but the heat evolved during rest of muscle is trivial." A figure of Erlanger's apparatus for determining the blood pressure in man is introduced. In dealing with the "starting mechanism of contraction," i.e., of the heart (p. 261), after noting the effect of galvanic shocks upon the isolated apex of a heart, it is stated that "if a stream of blood is passed through it, it will start contracting regularly and rhythmically." It might be well to indicate the part which internal pressure plays in the process. The diameter of capillaries is given but not their length. Perhaps the student would get a better grasp of one of the problems in relation to absorption if in addition to stating the length of the small and large intestine some data were introduced to show how the valvulæ conniventes on the one hand and the villi on the other enormously increase the superficial area both for absorption and it may also be for excretion. There is a short appendix dealing with some elementary facts of organic chemistry.

The work deals only slightly with histology and is illustrated by 181 figures in the text—some anatomical, a few histological, others of apparatus, and a number of excellent elementary diagrams. It is concise, lucid, and not too discursive, and should form an admirable introduction to the study of physiology by medical students.

## LIBRARY TABLE.

*Immuno-Chemistry.* By SVANTE ARRHENIUS. New York: The Macmillan Company. 1907. Pp. 309. Price 7*s.* net.—This book deals with the methods of physical chemistry in their application to the study of the theory of toxins and antitoxins and is therefore calculated to be a scientific contribution of some importance in regard to the nature and treatment of disease. As is known, there have existed two schools of opinion in regard to the interaction of toxin and antitoxin. On the one hand, the German school, led by Ehrlich, maintained that the reaction was chemical in its nature; on the other, the French school, led by Metchnikoff, ascribed the effect of an antitoxin to purely physiological action. Professor Arrhenius adheres to the chemical view, although he admits that he cannot say that the arguments of Ehrlich are quite convincing, "since the erythrocytes may well be regarded as 'living,' even after their separation from the blood of an animal." The fact, however, that approximately the *n*-fold quantity of a toxin requires the *n*-fold quantity of antitoxin for its neutralisation is more certain ground in favour of the chemical hypothesis, and this has led to its general acceptance. Professor Arrhenius has worked hard at the subject and amongst other things has tried to show that the phenomena observed might be explained in the case, at all events, of the diphtheria toxin on the supposition that that toxin is a simple substance which slowly decomposes into an innocuous material that still neutralises antitoxin. These lectures on the immunity reactions were delivered at the University of California during the summer of 1904 and they put forward in an explicit way the contentions of the various workers in this field. The title, "Immuno-Chemistry," embraces the chemical reactions of the substances that are produced by the injection of foreign substances into the blood of animals, i.e., by immunisation. These substances are considered, therefore, in the book before us in regard to their chemical properties. There are in all nine chapters: the first is introductory; the second deals with the reversibility of reactions between antibodies; the third with the velocity of reaction (homogeneous systems); the fourth with the velocity of reaction in heterogeneous systems; the fifth with equilibria in absorption processes; the sixth with the neutralisation of the hæmolytic properties of bases and of lysins of bacterial origin; the seventh with the neutralisation of diphtheria toxin, ricin, saponin, and snake venoms; the eighth with the compound hæmolysins; and the ninth with the precipitins and their antibodies. The fact that we possess a work summarising the achievements which have been gained in the chemistry of immunisation is of the utmost importance to medical science and no one is better fitted to write upon this interesting aspect of the subject than Professor Arrhenius who has done so much to join physics and chemistry together in the elucidation of biological problems.

*Tumours of the Cerebellum.* By JOHN WYLLIE, M.D. London: H. K. Lewis. 1908. Pp. 109. Price 4*s.*—The author explains in his preface that this work is based on the careful analysis of a large number of recorded cases, all of which "were proved to be cerebellar tumours, either by operation or post-mortem examinations." There is little new to be found in the book but a good summary is given of the knowledge which at present exists in regard to tumours of the cerebellum. Dr. Wyllie also expresses the views which he himself has formed on the subject. Occasionally he finds himself in opposition to the opinions expressed by some of the most distinguished of living neurologists. For instance, he maintains that nystagmus is a very frequent symptom of cerebellar tumours, whilst it is usually held, or at least some authorities state, that although nystagmus is an occasional symptom of tumour in many parts it is not frequent in tumours of the cerebellum. This symptom may not present itself with the frequency of headache, vomiting, optic neuritis, or ataxia, but Dr. Wyllie is of opinion that it is often met with when the cerebellum is the part affected. We have perused this small volume with interest and commend it as a work by a careful observer on a condition which has during recent years attracted much attention.

## JOURNALS AND MAGAZINES.

*Proceedings of the Royal Society of Medicine.* Vol. I., No. 5. March, 1908.—An interesting paper is contributed to the Epidemiological Section by Mr. R. C. Runnett, M.A., on Mendelism in Relation to Disease, which will repay the attention of those interested in recent advances in the investigation of problems of heredity. In the Medical Section Dr. Samuel West writes on the Acute Suffocative Catarrh of Laennec; in the Surgical Section Mr. A. H. Tubby on Coxa Valga; in the Pathological Section Mr. J. B. Leathes on Acidins in Pregnancy; in the Therapeutical Section Dr. Harry Campbell on the Therapeutics of Diet; in the Obstetrical and Gynæcological Section Dr. Martin Randall with Mr. T. W. P. Lawrence on Ovarian Dermoid with Secondary Cysts connected with the Omentum; in the Electro-Therapeutical Section Dr. H. Lewis Jones on the Principles of Ionic Medication; in the Odontological Section Mr. J. E. Spiller on the Dental Uses of Paraform; and Mr. W. J. Law, on the Termination of Nerves in the Teeth of Mammalians; whilst the Clinical, Dermatological, Laryngological, and Otological Sections are occupied with reports of many cases and specimens.

# THE LANCET.

*LONDON: SATURDAY, APRIL 18, 1908.*


## Tuberculosis of the Kidney.

MR. CHARTERS J. SYMONDS could hardly have chosen a more interesting or a more important subject for his Lettsomian lectures than Tuberculosis of the Kidney,[1] and his lectures were no mere summary of the current teaching of the day but based as they were on a series of cases carefully observed and treated they must advance our knowledge of the surgery of this disease. There were three matters which were specially brought forward by Mr. SYMONDS: the first was the great value in the early diagnosis of tuberculosis of the kidney of cystoscopy and other recent diagnostic methods; the second was the importance of the tuberculin treatment of small renal and vesical foci of tuberculosis when that treatment is controlled by opsonic estimations; and the third was the need for early removal of the kidney in suitable cases of tuberculous infection. Cystoscopy has proved of even greater value in diagnosis than was imagined by those who introduced the instrument and first employed it. It is as essential for the diagnosis of various vesical and renal conditions as is the ophthalmoscope in diseases of the fundus oculi and brain or the laryngoscope in diseases of the larynx. It is necessary, however, that the observer should be skilled in the use of the instrument, and this applies equally to the ophthalmoscope and to the laryngoscope. It is easy to misinterpret the cystoscopic appearances and therefore constant practice is necessary in order to obtain the fullest information. Mr. SYMONDS suggests that most surgeons should rely for information and guidance in this matter upon those who are specially skilled in the use of the cystoscope. As he says, it is easy to recognise gross changes and to see a calculus, but to pronounce from the appearance of the ureteric orifice that one or other kidney is in a sufficiently morbid state to demand its removal requires more than a casual acquaintance with this mode of examination. The cystoscopic view may reveal one ureteric orifice perfectly healthy and may show flowing from it a clear, rapid stream of urine—so far as this observation goes that kidney and ureter are healthy; while the lips of the orifice of the ureter of the other side may be seen to be swollen, puffy, and ulcerated, and it is noticed that from it flows a sluggish, cloudy stream of urine, then the surgeon can be certain that disease exists in the kidney and ureter of that side. The cystoscope may also show numerous tubercles around the affected ureteric orifice and perhaps tuberculous ulcers near. The value, then, of a cystoscopic examination by a competent observer is very great and it fails only in giving an exact estimate of the relative functional activity of the two kidneys. This information is best obtained by the use of the urine segregator, for there is a certain element of risk of conveying infection in the employment of ureteral catheterisation.

In very early cases where only a little pus and albumin are present in the urine, and even lumbar tenderness may be absent, the examination of the urine for tubercle bacilli after centrifugalisation is of the utmost importance and Mr. SYMONDS suggests that some of the slight cases of albuminuria which recover under general hygienic treatment may really be instances of very early renal tuberculosis. The matter can only be settled by the systematic examination for tubercle bacilli in all such cases. The matter is of some importance, for the question naturally arises, Is it justifiable to remove a tuberculous kidney when tuberculous foci are left in the ureter and bladder? Experience has shown that when the primary infecting source has been removed there is a tendency for these secondary foci to obsolesce and this tendency to recover is greatly aided by the tuberculin treatment employed under the control of the opsonic index, and several of Mr. SYMONDS'S cases have shown the benefit of this treatment. The tuberculin treatment is best suited for those cases where the disease is not extensive, such as those in which the tuberculous kidney has been removed but a portion of the affected ureter remains, as does some slight tuberculous affection of the bladder. In one case which Mr. SYMONDS described the cystoscopic examination gave no indication of renal disease but showed some marked ulceration of the bladder; tuberculin treatment failed to heal this but improvement followed after the removal of the kidney which was extensively diseased. It has been shown that until late in the disease renal tuberculosis may be confined to one kidney and on this fact rests the justifiability of the operation of nephrectomy. The surgeon must, however, be clear that the opposite kidney is healthy and capable of carrying on the renal excretory function, and he can generally make certain of this by the use of the cystoscope and the urine segregator. When, however, the data are not sufficient to justify a certain opinion, nephrotomy offers a chance of relieving the symptoms and at the same time affords an opportunity of deciding definitely the amount of urine secreted by each kidney. Should the result prove that the other kidney is functionally efficient the removal of the diseased organ may follow as soon as the general health will permit. This form of nephrectomy *à deux temps* is also advisable when the surgeon thinks that the patient cannot stand the complete operation at once. The nephrotomy will suffice to put an end to the pyrexia caused by toxic absorption, it will stop the infection of the ureter and bladder if the lumbar drainage is free, and it will give time for improvement of the general health. Still, if the patient can stand it, nephrectomy at one operation is preferable, for nearly the whole of the tuberculous disease present is removed at once.

An important question arises, What is to be done with the ureter? Whenever the disease of the kidney is at all extensive the ureter is sure to be affected also and the disease of the ureter is often visible by the cystoscope. In several of Mr. SYMONDS'S cases the ureter was left, yet recovery followed, but he considers, and we agree with him, that it is well to remove the affected ureter in those cases in

[1] THE LANCET, March 21st and 28th, 1908.

which the general condition of the patient will justify the prolongation of the operation. Mr. SYMONDS thinks that it is less harmful to leave a ureter which is still supple but when the ureter is much enlarged and rigid the chance of its recovery is much less. Ccincident disease of the bladder is a further indication for removal of the ureter either at the same time as the kidney or a little later, for it seems probable that recovery from the vesical tuberculosis is less likely if the discharge of tubercle bacilli from the ureter still continues. Lastly, the question of the possibility of removal of a localised tuberculous mass from a kidney, a partial nephrectomy, had to be considered. In one of Mr. SYMONDS'S cases the kidney showed a very localised patch of tubercle, though some miliary tubercles were also present. It seems probable that at a little earlier stage a partial nephrectomy might have been possible. The commonest site of early deposit of tubercle in the kidney is the lower pole and when the disease appears to be limited to this position the removal of this portion only seems fully justifiable but we do not yet know whether the tuberculous ureter would recover if the irritation of urine were still present; it is possible since tuberculous affections of the bladder are not necessarily fatal. It is probable that slight cases of tuberculosis of the kidney may recover without operation, for in the lung it is certain that tuberculous nodules may obsolesce; but when the cystoscopic examination shows that the ureteric orifice is characteristically affected it is certain that the renal disease is hopeless and the sooner the organ is removed the better.

## The Milk Problem.

THE promise of the President of the Local Government Board that, at no distant date, he will introduce a measure for the better regulation and control of the national milk-supply, at once justifies a hope of the near approach of a great sanitary reform and, at the same time, renders it the duty of all who aspire to guide public opinion to pave the way for this reform by the diffusion of information concerning the conditions essential to its accomplishment. An important step in this direction has been taken by Dr. JOHN C. THRESH in a lecture delivered at the University of Birmingham on March 30th under the auspices of the Midland Counties branch of the Incorporated Institute of Hygiene, and we are indebted to the courtesy of the general secretary of the institute for an opportunity of submitting an outline of Dr. THRESH'S views to our readers, while regretting that the limitations of space prevent us from publishing them in their entirety. After traversing a good deal of familiar ground, in relation to the usefulness of milk as an article of food both for children and for adults, and also to its qualities as a nutritive medium for bacteria, Dr. THRESH laid down the general principle that the points chiefly requiring attention are the healthiness of cows, the exclusion of dirt, and the maintenance of the milk at a temperature sufficiently low to check bacterial multiplication. In order to secure these essentials he would have all tuberculous cows destroyed under veterinary inspection, with compensation to owners in proper cases; and he would enforce the cleanliness of cowsheds, the purity of all water employed in or about a dairy, the regular grooming of cows, with careful removal of dung from their flanks or udders, the cleanliness of pails, milking-stools, and other utensils, and the cleanliness of the hands and clothes of milkers. The milk drawn under such conditions, unless sold for immediate consumption, should then be cooled to a temperature of 40° F. and protected from adulteration in locked churns, while the railway companies should be called upon to supply sheltered storage for such churns and to convey them in such a manner that the preservation of a low temperature should be secured. For the maintenance of these conditions he would place the inspection of cowsheds and dairies under the local sanitary authorities of every district, rendering it a duty to be done instead of a possibility to be neglected, and would give an appeal to the county or other superior authority in every case in which neglect was imputed. Dr. THRESH'S few references to preservatives and his belief in the efficacy of low temperature in checking bacterial growth justify the conclusion that he would entirely prohibit the addition of chemicals, and while he admits that his suggestions would only extend as far as to dealers he appears to think that the proper care of milk in the homes of the purchasers may in time be hoped for as a result of "education." He would, however, require retail milk-sellers to be licensed annually, and would render the renewal of the licences dependent upon the careful observance of such conditions of storage and exposure for sale as might be laid down from time to time by the proper authorities.

It is obvious that the first inquiry of a milk-purveyor, either upon a large or upon a small scale, if the trade were confronted with proposals for legislation of this kind, would be as to its probable effects upon the profits of his business, and from this point of view Dr. THRESH'S views are decidedly encouraging. He asserts that his demands are "not only reasonable and practicable and in the interest of the general well-being of the community, but that they will also serve the best interests of the great dairy industry," and he rests this opinion upon his belief that the "amount of milk used at the present time is only a fraction of the amount which should be used, and which will be used when a purer milk is available." He quotes some figures supplied by Dr. G. SOWDEN, the medical officer of health of East Ham, a district with a population of over 100,000 persons, chiefly of the working class. Dr. SOWDEN found that the amount of fresh milk used daily averaged a little less than three ounces per person, or one pint per person per week. The 100,000 persons used 960 dozen tins of condensed whole milk and 1800 dozen tins of condensed separated milk per week. "The total consumption of milk of all kinds is under two pints per person per week, and of this very nearly half is imported milk and over one-fourth is skimmed milk." Dr. THRESH points out that, while nearly half of the milk consumed in towns is of the imported variety, its cost is two or three times that of fresh milk of similar quality; and he argues that if "by gaining the sympathy of the public this sale (of imported milk) could be decreased, it would be of very great advantage to our milk producers and, what is even of greater importance, it would be to the advantage of the poor." There is abundant evidence to show the influence which a wholesome and sufficient milk-supply would be

likely to exert in the diminution of infantile mortality and also, which is perhaps even more important, in promoting the physical and intellectual welfare of the children who survive; and we see every reason to believe that the views so well advocated by Dr. THRESH are as sound economically as they are when regarded under their sanitary aspect. It is certain that there are dairies in which proper precautions with regard to cleanliness and water-supply are even now enforced and which nevertheless yield satisfactory profits to their proprietors. With regard to the cost of refrigeration Dr. THRESH points out that it would be easy for the smaller dairy farmers of any locality to unite their forces for the purpose, and that the supply of refrigerating railway vans has long been in operation in many foreign countries.

If the Bill promised by Mr. BURNS should be found on its introduction to be based somewhat upon the lines which Dr. THRESH has laid down, it should, we think, receive favourable consideration from the trade as well as from the public. The chief difficulty of enforcing its provisions would probably be found in the passive resistance to cleanliness of workpeople long accustomed to the conditions of filth which now prevail in dairies rather than in any increase of cost or diminution of profits. What these conditions of filth are may be read in almost every report issued by the Local Government Board concerning the sanitary state and administration of any country locality; and the details are usually so disgusting as to deprive us of any temptation to dwell upon them. It is certain that the customs in this respect which now prevail can only be overcome by great determination and continuous and close supervision on the part of employers who should, of course, be made responsible for any negligence which they permit. The Parliamentary opposition most to be dreaded is, we fear, that which will arise from interests which will be really imperilled and which will be imperilled because their continued prosperity is incompatible with the public welfare.

## The Treatment of Soldiers Invalided for Tuberculosis.

THE committee appointed by the War Office "to consider the care and treatment after discharge from the army of soldiers invalided for tuberculous disease" has issued a preliminary report describing in outline a scheme which it puts forward for dealing with the matter. The committee, which consists of Surgeon-General Sir A. H. KEOGH, K.C.B., Lord LUCAS, Lieutenant-Colonel J. E. B. SEELY, D.S.O., M.P., Sir J. BATTY TUKE, M.P., and Mr. T. SUMMERBELL, M.P., with Colonel Sir E. W. D. WARD, K.C.B., K.C.V.O., as chairman and Mr. H. W. MOGGRIDGE of the War Office as secretary, has heard the evidence of a number of expert witnesses and has come unanimously to a general conclusion. Under the method at present in existence it is laid down that in the case of soldiers suffering from tuberculosis of the lung they shall be at once discharged from the army and sent to their own homes as soon as they are fit to travel, all responsibility in regard to them being then disowned. They are not awarded any pension unless they have earned it by length of service or unless it can be proved in any particular case that the disease was due to service or climate. The reason given for this regulation was the necessity that men suffering from the disease should be removed from contact with other soldiers, and it was found that its adoption was followed by a great reduction in the proportion of cases of tuberculous disease in the army, and the committee strongly upholds the necessity of so removing the patients. It points out that in practice the stringency of this regulation has been greatly mitigated, since the patients have usually remained in military hospitals under proper care and with adequate precautions for periods varying from four to six months, and have subsequently in many cases been sent to civil institutions through private or regimental charity. The committee is of opinion that the State should admit responsibility for the men and that suitable treatment should be organised. It supports this opinion not so much on the claims of the patients themselves as on the necessity for avoiding the danger to the civil population entailed by the discharge to their own homes of men suffering from a disease with which they are likely to infect others.

Having arrived at the conclusion that the State should afford means of treatment the committee has discussed two alternative methods for so doing, the first of which was the foundation of a central military sanatorium to which all the patients should be sent for treatment. This proposal the committee rejected after careful consideration on the following amongst other grounds. The results in America of a similar expedient have not been very successful, the benefit derived by the patients being markedly less than that obtained in the majority of civil institutions. It was calculated that the cost would not be less than that of the alternative proposal to be described below and that there would be in addition the large initial outlay necessary for buildings and equipment. It was further considered undesirable to augment the Royal Army Medical Corps by the addition of a staff of specialists in sanatorium treatment as would be a necessity if the proposed central institution were to be carried on to the greatest advantage. The proposal put forward by the committee as the best solution of the problem is that the army should make use of the rapidly increasing number of civil sanatoriums and that some of these institutions should be approached with the request that a certain number of beds should be reserved for the sole use of the army. It has some reason to hope that a sufficient number of beds will be obtainable in this manner to afford treatment to all soldiers who require it for a period of from three to six months. Under this scheme all soldiers who were *suspected* (the word is italicised in the report) to have tuberculosis would be at once removed from the military hospital, each being sent to the sanatorium nearest to his own home at which a bed was available. They would, as at present, be at once discharged from the army and would return to their homes after their period of treatment at the sanatorium and they would not be allowed to re-enlist. It is admitted that on this scheme those cases in which the disease had reached an advanced stage before it was detected would require to be dealt with separately owing to their being ineligible for sanatorium treatment. It is stated that such cases are rare in the army and it is proposed that efforts should be made to get such patients

into "incurable" wards, or failing this that they should be discharged as at present, the committee being of opinion that advanced cases of this kind are less of a public danger than those who are less ill and therefore able to go about, a view which is hardly likely to appeal to those who advocate the segregation of advanced cases. In regard to the cost of its proposal the committee states that the average number of soldiers invalided annually for tuberculosis of the lungs is about 400, and it estimates that, excluding the advanced cases and those who refused to remain in sanatoriums, the number remaining for treatment would not exceed 350. The committee suggests that in order to allow of sufficient accommodation 200 beds should be retained, each being able to accommodate two patients a year. It is thought that the cost of maintaining a bed will average about 30*s.* a week and the scheme would thus entail an expenditure of £15,600 per annum. The committee therefore estimates that the total cost of the scheme will not exceed £20,000 per annum and that a part of this will be counterbalanced by the fact that tuberculous patients will remain in military hospitals for a shorter time than at present. It is suggested that at first the Army Council might make a reasonable contribution towards the extension of a sanatorium which proposed to increase its accommodation, such contribution, however, to be met by a corresponding reduction from the annual cost as estimated above.

The proposal to make some effective provision for the treatment of the tuberculous soldier is one with which we are in full sympathy. At present, after discharge from the army the unfortunate sufferer from pulmonary tuberculosis has either to seek admission to one or another of the civil charitable or paying institutions, with the chance that by the time he is admitted his disease is too far advanced to render him suitable for sanatorium treatment, or else to remain at home endeavouring to earn enough to support himself, in which he is handicapped by his lack of experience of civilian occupations. The scheme suggested by the committee, though obviously not perfect, is a serious attempt to deal with a difficult problem. The proposals are admittedly tentative and are doubtless capable of modification in detail if the general principle is accepted by the Army Council, for the committee states in its report that if it is so accepted it will proceed to elaborate it in detail. It seems to us that there are some few matters in connexion with the report which require careful consideration. The first is that the practical withdrawal from the civilian population of even 200 sanatorium beds is a serious limitation of the already scanty accommodation available for those of the poorer classes of the community affected with pulmonary tuberculosis, and in our opinion it ought clearly to be emphasised that a sufficiency of new beds should be established to avoid any such detraction from the resources provided for the civilian sufferers. It may be doubted whether, given the provision of means for treatment, the yearly number of cases will prove to remain at the low figure of 400, especially if very early and suspicious cases are at once drafted to sanatoriums, since there will be less likelihood of concealment of the disease on the part of the sufferers. The results achieved by sanatorium treatment under the proposed conditions should be very satisfactory, as the cases for the most part will be early cases in previously healthy adults, and a short period of observation in a military hospital should be of value in the proper selection of cases for sanatorium treatment. One defective feature of the scheme is the proposal in regard to advanced cases, for which more adequate provision is necessary if the army is going to assume responsibility for the tuberculous soldier. In civil life, apart from the Poor-law infirmaries and a few "incurable" wards or homes, little provision exists for treatment in institutions of advanced cases, and if the army is going to evade its responsibilities in regard to this section of its patients little advance has been made and it must not be forgotten that the failures from the sanatoriums will serve to swell the numbers of these "advanced" cases which, the view of the committee notwithstanding, are not the least dangerous from the point of view of infectivity.

# Annotations.

"Ne quid nimis."

## A GREEK MUNICIPAL HOSPITAL IN THE FIFTH CENTURY B.C.

IN THE LANCET of Jan. 12th, 1907, p. 104, a drawing was given, in illustration of "The Medical Art in the Homeric Period," of a scene depicted upon a Greek vase of Achilles binding up the wound of Patroclus. Since those notes were published M. E. Pottier has edited in the "Monuments and Memoirs" of the Paris Academy, funds for which were provided by the late M. Piot, a still more interesting, from the medical point of view, piece of ancient ceramics under the title of "Une Clinique Grecque au V^e^ Siècle." Several other delineations of the first aid applied to wounded warriors have previously been noted and some published—notably, the amphora in the Hope collection showing Sthenelos binding up the hand of Diomedes; a vase in the museum at Florence depicting soldiers binding each other's wounds; an Etruscan mirror at Bologna, showing Machaon, the primitive surgeon, performing the same office for Philoctetes; and a seated warrior having his limb dressed by a surgeon, engraved upon a seal given in the "Dictionary of Antiquities" of M. Saglio. There are also some figures of wounded legionaries having their limbs bandaged upon the Roman column of Trajan.[1] It will be noted that all these instances are connected with injuries received in warfare, while the new vase, for a reproduction of which we are indebted to M. Pottier, depicts a scene in a hospital, or clinic, of some city, probably Athens, in times of peace, and so is unique. We know from the classics, but more particularly from inscriptions, that the Hellenic cities used to have public places supported by the citizens where physicians and surgeons, provided with the necessary appurtenances, attended to the medical needs of the poorer members of the community. The cost of such arrangement, including the payment of the operators, was defrayed by a special impost. The *ἰατριχόν*, and the post or edifice placed at the disposal of the surgeons was termed an *ἰατρεῖον*. This physicians' tax is often mentioned in Græco-Egyptian papyri but there was devoted to paying salaries to the civic medical officers who had to take part in post-mortem examinations, to combat epidemics, and to give certificates of births and deaths. M. Pottier, fortified by the advice of Dr. Pozzi who, he tells us, in addition to his qualities as a practitioner, possesses the ardour of an antiquary, is quite certain that the scene depicted upon the new vase is to be considered as being

[1] There is also a vase now at Athens representing wounded athletes to which we propose to refer on another occasion.

enacted in one of the ancient public clinics. This tableau, which is upon the body of the vase, displays seven persons, the central figure being the medical attendant, almost a youth. He is seated and engaged in bandaging the arm, just above the wrist, of a man standing before him. Behind the operator, and apparently intended as being attached to the wall of the saloon, or booth, in which the scene is situated, are three objects which M. Pottier considers to be cupping glasses.[2] In front of the surgeon is placed a basin for containing water with which to sponge the wounds. Beyond this and also facing the operator is a second patient seated upon a stool. He has the upper part of his left arm bandaged with a white material tied crossways over the biceps. His left foot is also tied up with a strip of red material. To the form and colour of these M. Pottier thinks some magical as well as medical import was attached. The other personages in the field of the vase are a man standing, of whose malady nothing can be detected beyond the presence of a large bandage across the chest and who is talking to a dwarf with disproportionately large shoulders and short swollen limbs and pointed beard. This diminutive figure is naked and illustrates most accurately the chief physical peculiarities of his type and is, from a medical point of view, the most valuable figure upon the vase. He carries over his shoulder a hare, no doubt indicating that he is the page of the medical officer with whom, as was common in Greek social life, the visitor wished to be on special good terms to insure prompt attention from his master and so had brought a gift. It would appear to have been a happy thought to utilise a dwarf as servant to a medical officer, thus providing him with a patient offering in his person a constant object of study. Beyond the dwarf the sixth person is standing with her left leg bandaged. The seventh figure is also standing but is mutilated and is very indistinct. The first four patients are all supporting themselves with stout sticks as if weak from loss of blood. The conclusion which Dr. Pozzi and M. Pottier arrive at is that the scene upon the vase depicts the bleeding of patients, a remedy frequently used in ancient therapeutics. Hippocrates recommended cupping at the limbs, preferably the arms, though sometimes the feet, and it is upon these that the bandages upon these figures are placed. Moreover, the bandages are not bound as they would be for fractures or recent wounds. One patient, it is true, has a bandage across the chest but Dr. Pozzi cites special cuppings thereupon, or upon the shoulders, as being mentioned by Celsus. This explanation of the tableau would explain the youth of the operator, he being engaged in a simple operation, and the middle age of all the patients. We know that Timarchus as a medical student was employed in his practice by Euthydicus and doubtless the young man shown upon the vase had a more experienced physician or surgeon with him at the municipal clinic. The essay of M. Pottier is furnished with a plate representing the whole scene upon the vase, spread out as a continuous flat picture, also of the new vase painting of the wounded athletes in the Athens museum. The publisher of the "Monuments et Mémoires Fondation Eugène Piot" for the Académie Française is M. Ernest Leroux of Paris.

## SECRET REMEDIES AND QUACK MEDICINES IN SWITZERLAND.

SWITZERLAND is an eminently democratic country and has always been in the van against authority other than that derived from the people. Yet it does not go so far as to allow fools to be exploited by mischievous quacks without at least warning them. We learn from the *Feuille D'Avis de Montreux* of April 9th that the health authority of the canton of Vaud has, in response to many inquiries as to the value of secret remedies and "specialities," issued a warning putting the public on its guard against advertisements of nostrums. The notice goes on to say that the more alluring promises of cure are as a rule fallacious. There is no efficacious remedy against drunkenness, no infallible specific for tuberculosis or cancer, and no marvellous panacea for the re-establishment of health. Foreign "*specialistes*" have tried to enter the canton to exploit unfortunate invalids, but a rigorous application of the law has thwarted their projects. It is regrettable that there are no legal regulations similar to those against lotteries, so that the dangerous advertisements might be forbidden. The sanitary authority concludes by saying that it can only advise people never to have recourse to secret remedies the therapeutic effect of which is *nil*, the price of which is exorbitant, and the only effect of which is to delude the sufferer and to prevent him from applying for medical advice which might do him good. We congratulate the canton of Vaud on having so sensible a health authority and wonder when we shall see the London County Council issue a similar warning.

## THE ETIOLOGY OF APPENDICITIS: AN EVER-PRESENT QUESTION.

THE cause of the apparently sudden outburst of appendicitis which has occurred within recent years has exercised many minds and the explanations have been numerous. In THE LANCET of April 11th, p. 1115, in "Notes from China," it was suggested that some anatomical peculiarities in the appendix in European races might predispose to appendicitis. An interesting pamphlet has recently appeared at Madras in which this problem has been attacked in a somewhat unusual way, for the writer, Mr. James Harris, L.M. & S., has attempted to explain not the increase of appendicitis in this country and in America but the comparative rarity of the disease in India. It seems to be clear that appendicitis is rare in India. In October, 1907, the editor of *Medical Missions in India*, the journal of the Medical Missionary Association of India, invited replies to the questions, What is your experience of appendicitis among natives of India? If in your experience it is rare, can you suggest a reason? The editor himself mentioned that he had never diagnosed a case of appendicitis in 18 years' practice in India and he suggested the simple diet of the people as the cause of their comparative immunity. 13 replies were received and though some of the writers had had experience of India extending over many years, yet they reported only 11 certain and five doubtful cases of the disease. Only two or three of those who wrote offered any opinion as to the reason for this immunity and these agreed that the main factor was the diet, though it was also suggested that the absence of violent exercises had some influence. One writer quoted with approval Mr. W. H. Battle's explanation that the introduction of steel rollers for the milling of flour has been responsible for the increase in Great Britain and America, as small particles of steel can be found in the flour; and steel-ground flour is almost unknown in India. Mr. Harris will have none of these explanations. He points out that natives in India generally bolt their food, that the grinding stones in India leave many stony particles amongst the material that has been ground, and that many seeds of fruits are swallowed whole. Yet in spite of all these likely causes appendicitis hardly ever occurs. Mr. Harris's explanation is two-fold. The first suggestion is that the habitual purgation which occurs in India prevents the lingering of irritating materials in the cæcum. We may quote the words of the pamphlet: "From the day, nay, even the hour, the Indian gentleman emerges from the fœtal state to infancy to the date of his

[2] In reference to this subject it should be noted that Dr. C. P. Lambros of Athens in 1895 published a special treatise upon the phlebotomy of the ancients in Greek but presented a French translation of it, which may be found in the Archives de l'Académie de Médecine, to that society.

final dissolution he is subjected to the cruel act of purgation. Purgative for everything and to everyone. The suckling babe, the hardy adult, and the decrepit old, everyone receives a purge for any distemper, imaginary or real." The second factor in the prevention of appendicitis is, in Mr. Harris's opinion, the attitude adopted in defæcation by natives of India, and he has illustrated this by reproductions of two photographs. These show that the native gathers up the fringes of his cloth into a ball and presses them on the ilio-hypogastric region. He then squats down, the right foot pressed firmly on the ground and the right thigh pressing firmly on the right ilio-hypogastric region. The left foot is placed behind, resting on the toes, so that the left thigh forms a large angle with the left abdominal wall. In this attitude the cæcum is well compressed, the regurgitation of fæces or gas from the lower bowels is prevented, and a stimulus to downward peristalsis is kept up; thus the cæcum is thoroughly emptied and the contents are driven lower. Then the native changes so that the position of the lower limbs is reversed, the left thigh being sharply flexed and the right thigh extended; in this way the lower bowel is emptied. Thus Mr. Harris maintains that frequent purgatives and the rational posture adopted by the Indian in the act of evacuation are the two main causes that help to the rarity of appendicitis among the Indians. We are inclined to think that both of the facts mentioned really have an influence in preventing appendicitis. Constipation certainly has a tendency to block the opening of the appendix or to force fæcal materials into it. Therefore a regular emptying of the cæcum must tend to diminish the probability of appendicitis. The phraseology adopted is occasionally rather peculiar. For instance, in objecting to the suggestion that the use of steel rollers in grinding flour is a cause of appendicitis in England, the writer says, "If there could be any lien on such a bleb of a cause, I can point out much more formidable ones in India." In speaking of the presence of particles of stone in the meal he says: "Leaving aside the direct pathological consequences the chances of swallowing small stones which the unskilled cook fails to remove from the rice are very great. A slow eater and a careful masticator when confronted with them after exhausting his ire on the household, might remove or spit out the offender and continue his meal when alone. In an assembly or in a public feast to put one's finger into the mouth to remove the stone or spit it out is a pollution and is indicative of low birth. In preference to this stigma one would easily wash in any number of them with impunity."

## PROLONGED CONJUNCTIVITIS FOLLOWING CALMETTE'S OPHTHALMO-REACTION.

EVIDENCE is beginning to accumulate that the ophthalmo-reaction of M. Calmette, which is most valuable and has attained world-wide popularity in such a short time, is not quite so innocuous as he has claimed. In THE LANCET of March 7th (p. 716) Dr. A. Maitland Ramsay has reported a case in which a violent reaction accompanied by ulceration of the cornea occurred and a considerable opacity, seriously impairing vision, remained. In the *Boston Medical and Surgical Journal* of March 12th Dr. Malcolm Mackay has recorded the following case. A woman came under observation on Nov. 23rd, 1907, complaining of "rheumatism" of the left knee. For one and a half years she had been troubled with a good deal of pain upon walking, although active and passive movements while sitting down were practically painless. At night she was often kept awake by aching in the joint and at times was awakened by the pain. Examination showed moderate diffuse swelling in and about the joint which was held slightly flexed but could be straightened. There was no redness or heat and the patella was not floating, although lateral movements produced a soft crepitus. There was marked tenderness over the head of the tibia at the external tuberosity about three-quarters of an inch below the articular surface. A cough had existed more or less for two years and there was a family history of tuberculosis. Examination revealed a "pulmonary lesion" and evidence of old spinal disease at the lower dorsal and upper lumbar region. A few tubercle bacilli were found in the sputum. As the patient wished the diagnosis of tuberculosis to be confirmed by an expert she was sent to one, and on Dec. 14th one drop of Calmette's 1 per cent. solution was placed in the right eye. The reaction promptly appeared and was very marked: photophobia, lacrymation, and gumming of the eyelids were very troublesome. A lotion of boric acid was used and the condition remained about the same for ten days and then subsided. On Jan. 20th there was recrudescence; the conjunctiva was red and the eye was partly closed. On the 25th the inflammation was severe, the bulbar and palpebral conjunctiva being involved with chemosis and gumming of the lids. Boric acid and zinc drops were prescribed and a boric acid ointment was applied to the lids which developed a row of small pustules. On Feb. 26th, more than ten weeks after the instillation, the conjunctiva was red and there was slight photophobia with some narrowing of the palpebral fissure. The conjunctivitis was confined to the eye into which the tuberculin was put. The patient had never previously had any trouble with her eyes.

## THE WEATHER: DEC. 1st, 1907, TO MARCH 31st, 1908.

THE appended figures represent the chief meteorological elements from Dec. 1st, 1907, to March 31st, 1908, in various parts of the kingdom, some of the stations being well-known seaside resorts, others inland resorts, and others again some of the chief centres of population. Compared with the corresponding figures for the same localities published in THE LANCET a year ago the temperature and rainfall show an increase, while the number of hours of sunshine, owing to a much less sunny March, was considerably less. Compared with the average, however, the divergence of temperature was slight, as was also that of rainfall and sunshine for a great many of the stations, but several places in the south-west were a good deal drier than usual and some in the north and north-east appreciably wetter. The mean daily temperature ranged from 50° F. at the Scilly Isles and 49° or 48° at some other resorts in the south-west and at Sandown, Isle of Wight, to 44° at Tunbridge Wells, Blackpool, Glasgow, and Aberdeen, and 43° at Harrogate, while the mean cold of the nights varied from 44° at Scilly and 41° at Falmouth to 33° at Nottingham and Harrogate. Over the country generally the mean diurnal range was small, less than during the same period last year, the highest figure, 12° at Nottingham, being just twice as large as the lowest, 6° at Scilly. The difference in the mean warmth between Harrogate, the coldest place represented in the table, and Falmouth, the warmest place on the mainland, was 6·8°, while between Harrogate and Scilly the difference was just 9°. Sandown, Isle of Wight, was a trifle cooler than Torquay at night, but warmer than Bournemouth and Hastings both during the night and day. It will be observed that at Scarborough the mean temperature figures were almost identical with those in London and that both Dublin and Douglas, Isle of Man, were milder than Hastings and the south-east coast of England, while Blackpool had practically the same temperature as Aberdeen. Folkestone, Hastings, and Lowestoft had the least rain, and Falmouth, Glasgow, and Douglas, Isle of Man, the most, while the sunshine was more prevalent at Sandown, Isle of Wight, Jersey,

Hastings, and Tunbridge Wells than elsewhere. Manchester and Glasgow were, as usual, the most sunless localities, but Birmingham and London were not much brighter. In London the total number of hours, 169, was 88 less than last year during the same period, and at Lowestoft the figure was 166 hours less.

| — | Temperature. | | | | | Rainfall. | | Sunshine. | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean maximum. | Mean minimum. | Mean temperature. | Difference from average. | Mean diurnal range. | Total fall. | Difference from average. | Number of hours. | Difference from average. |
| | ° | ° | ° | ° | ° | Ins. | Ins. | | |
| Douglas (Isle of Man) ... | 46 | 37 | 41·2 | −0·1 | 9 | 1·57 | +2·0 | 283 | +41 |
| Blackpool ... | 44 | 35 | 39·5 | −0·8 | 9 | 1·00 | +0·2 | 287 | −19 |
| Llandudno ... | 47 | 38 | 42·3 | 0·0 | 9 | 1·01 | +0·5 | 301 | +34 |
| Pembroke ... | 47 | 40 | 43·2 | 0·0 | 7 | 1·27 | +0·2 | 295 | − 8 |
| Falmouth ... | 48 | 41 | 44·6 | +0·5 | 7 | 1·64 | −1·1 | 312 | −19 |
| Scilly ... ... ... | 50 | 44 | 46·8 | +1·2 | 6 | 1·04 | −2·1 | 321 | −22 |
| Jersey ... ... | 48 | 39 | 43·4 | −0·3 | 9 | 0·96 | −2·2 | 392 | +23 |
| Torquay ... ... | 49 | 39 | 43·7 | +0·2 | 10 | 1·06 | −2·3 | 332 | − 7 |
| Sandown (Isle of Wight) ... | 49 | 38 | 43·3 | * | 11 | 0·0 | * | 410 | * |
| Bournemouth... | 47 | 36 | 41·6 | * | 11 | 0·3 | * | 336 | * |
| Hastings ... ... | 45 | 37 | 40·8 | +0·1 | 8 | 0·7 | −2·7 | 363 | +28 |
| Folkestone ... | 45 | 35 | 39·8 | 0·0 | 10 | 0·7 | −3·3 | 336 | * |
| Margate ... ... | 45 | 36 | 40·8 | +0·4 | 9 | 0·1 | +0·3 | 287 | + 1 |
| Lowestoft ... ... | 45 | 34 | 39·4 | −0·1 | 11 | 0·8 | +0·4 | 283 | * |
| Scarborough ... | 46 | 36 | 40·8 | +1·3 | 10 | 1·00 | +2·2 | 282 | * |
| Aberdeen ... ... | 44 | 35 | 39·4 | +0·9 | 9 | 0·4 | −1·1 | 281 | + 4 |
| Glasgow ... ... | 44 | 36 | 39·9 | +0·7 | 8 | 1·62 | +3·2 | 140 | −61 |
| Manchester ... | 45 | 36 | 40·2 | +1·0 | 9 | 0·6 | * | 112 | * |
| Birmingham ... | 45 | 34 | 39·0 | −0·2 | 11 | 0·2 | +0·4 | 157 | * |
| Nottingham ... | 45 | 33 | 38·8 | −0·3 | 12 | 0·7 | +0·6 | 211 | * |
| Harrogate ... | 43 | 33 | 37·8 | −0·3 | 10 | 1·03 | +1·5 | 279 | * |
| Bath ... ... ... | 46 | 35 | 40·6 | −0·4 | 11 | 1·03 | +0·6 | 304 | * |
| Tunbridge Wells ... | 44 | 34 | 39·0 | −0·1 | 10 | 0·9 | +0·4 | 361 | +82 |
| London (Westminster) | 46 | 36 | 40·9 | +0·3 | 10 | 0·0 | +1·0 | 169 | +34 |
| Dublin ... ... | 47 | 38 | 42·8 | +0·3 | 9 | 0·8 | +0·4 | 290 | −14 |

* No trustworthy average available.

## MEASUREMENT OF RESPIRATORY MOVEMENTS.

OUR teaching concerning the mechanism of respiration has altered less in the last 50 years than that relating to any other subject embraced by the medical curriculum. To a large extent this apparent lack of progress has been due to the exhaustive and accurate account of the human mechanism of respiration published by Dr. Hutchinson in Todd's "Cyclopædia of Anatomy and Physiology" in 1852. With the introduction of x rays some nine years ago it was expected, and to a very considerable extent the expectation has been justified, that our knowledge of the respiratory movements of the diaphragm, ribs, and thoracic viscera would be revolutionised. As originally used, the x rays were too divergent in character to give accurate information as to the *extent* of these movements; for instance, earlier investigators estimated the total vertical movement of the domes of the diaphragm as varying from 75 millimetres to 90 millimetres (3 to 3½ inches). With more accurate instruments, such as Groedel's orthodiagraph, these movements are found to be much less than originally estimated. Working with this instrument Dr. J. F. Halls Dally[1] finds on examining 100 healthy individuals, varying in age between 15 and 35, that "the absolute range of movement of the diaphragm between deep inspiration and expiration in the adult male is, on the right side 34 mm., on the left side 32 mm. The range in adult females amounts to 27 mm. on the right side and 25 mm. on the left side." In all his measurements of the neck, clavicles, shoulders, and ribs, with the exception of the lateral expansion of the ribs over the left hypochondrium, Dr. Dally finds that the movements of the right side of the thorax exceed those of the left. Dr. Dally was amongst the first to recognise the importance of the "transradiant triangle" of the thorax. This is best seen when the thorax is examined obliquely; it corresponds to the posterior mediastinum of anatomical text-books, being bounded behind by the spinal column, in front by the posterior border of the heart and pericardium, and below by the shadow cast by the domes of the diaphragm and their contents. As an inspiration proceeds this triangle is seen to open up. The widening of the triangle was originally supposed by Keith[2] to be due to the inspiratory forward and downward swing of the heart, but Dr. Dally finds the widening of the triangle is due also to a backward movement of the spinal column which takes place towards the end of a full inspiration. In this movement the curvature of the dorsal region is undone to a certain degree. Dr. Dally attaches a high importance to the spinal movement as a means of complete expansion of the lungs. In the paper just communicated to the Royal Society Dr. Dally gives merely the average measurements of the respiratory movements. However useful such measurements may be, only a complete statement of all his measurements, with an accurate description of how they were obtained, can be of real service to those who are at present investigating this subject.

[1] Proceedings of the Royal Society, Feb. 6th, 1908.

## THE ADMISSION OF WOMEN TO THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN official circular has been sent out by the Council of the College inviting Fellows and Members to give their opinion "Yes" or "No" on this subject. We are asked to say that an unofficial circular is about to be issued to Members regarding the admission of women to the Membership and Fellowship, and that in this circular it is suggested that Members should disregard the request of the Council of the College that the answers to the questions in the official circular should be in the form of simply "Yes" or "No." The authorities of the College hope that Members, with a view to avoiding confusion as regards the result of the poll, will record their answers on the official balloting-card in accordance with the instructions for voting contained thereon.

## COST OF MEDICAL INSPECTION OF SCHOOL CHILDREN.

THE East Sussex education committee on April 7th adopted the report of the special subcommittee appointed to draw up a scheme for the medical inspection of children. When the subject first came before the education committee a prophecy was made that the carrying out of the provisions of the Act would necessitate an expenditure of at least £500 a year, there being nearly 26,000 children in 176 schools in the committee's jurisdiction. Proceeding on the most economical lines, the subcommittee finds that the cost of the working of the Act will be £800 a year. The initial cost for the first year amounts to £1371 16s., the difference between this sum and £800 being the estimated cost of the appliances. It has been decided to appoint a superintending medical officer whose whole time shall be

[2] THE LANCET, March 7th, 1903, p. 633.

devoted to the duties, the salary to be £400 per annum, with an allowance of £40 per annum for travelling expenses; also a male assistant medical officer at a salary of £250 per annum, with an allowance of £40 per annum for travelling expenses. The clerical work is to be carried out in the office of the secretary of the education committee. How the total of £1371 16*s.* is made up is shown by the following:—

| | £ | *s.* | *d.* |
|---|---|---|---|
| Officers' salaries and expenses ... ... ... ... ... ... | 730 | 0 | 0 |
| 176 weighing machines, at £1 5*s.* ... ... ... ... ... | 220 | 0 | 0 |
| 176 height measuring standards, at 3*s.* 6*d.* ... ... ... | 30 | 16 | 0 |
| 360 copies of Snellen's test type (two patterns), at 10*s.* per dozen ... ... ... ... ... ... ... ... ... | 15 | 0 | 0 |
| 176 screens, at 10*s.* each ... ... ... ... ... ... ... | 88 | 0 | 0 |
| 15,000 cards, at 20*s.* per 1000 ... ... ... ... ... ... | 15 | 0 | 0 |
| 240 card cabinets (tin) ... ... ... ... ... ... ... ... | 90 | 0 | 0 |
| 352 registers ... ... ... ... ... ... ... ... ... ... | 50 | 0 | 0 |
| 15,000 notices to parents ... ... ... ... ... ... ... | 7 | 10 | 0 |
| Five medical officers' note-books, at 2*s.* ... ... ... | 0 | 10 | 0 |
| Sundries ... ... ... ... ... ... ... ... ... ... ... | 125 | 0 | 0 |
| | £1371 | 16 | 0 |

## BACILLARY DYSENTERY.

WE have received a copy of a pamphlet on Bacillary Dysentery written by Dr. A. E. Taylor as a thesis for the degree of M.D. Cambridge. It is based upon an analytical study of 325 cases observed at Outtrim, South Gippsland, Australia, between August, 1902, and April, 1907. Dr. Taylor held the post of surgeon to the Outtrim and Jumbunna collieries, but in addition treated practically all the cases of illness in the inhabitants of the surrounding district, so that his observations are of special interest as a record of the general health of the population of the district, which comprised about 4000 persons. He gives a list of some of the more important conditions observed which include, in addition to the cases of dysentery, 116 cases of diarrhœa, 193 of infantile diarrhœa, 27 of enteric fever, and 19 of appendicitis. He is of opinion that defective sanitation is the chief factor concerned in the propagation of bacillary dysentery and, as an example, its rapid spread among the colliers is attributed to the fact that until recently there were no sanitary conveniences in the coal-pits and the pit water therefore became infected. The disease was most prevalent in the autumn months, chill and exhaustion being very potent predisposing causes. There was a slight preponderance of the cases among males, which is attributed to the greater frequency of exposure to infection and of predisposing debilitating conditions. The evacuations were examined microscopically and bacteriologically in a large number of cases and in no instance were amœbæ found, but invariably a motile bacillus was present the characters of which were in the main identical with those of the Shiga bacillus as given by Kitasato, save that it was more actively motile and was non-pathogenic to dogs. Dr. Taylor, referring to the work of Ohno,[1] who found when working in Manila that there are 15 varieties of the dysentery bacillus all shading into one another but distinguishable by fermentative, agglutinative, and other bacteriological tests, suggests that the bacillus varies in character in different parts of the world. He further believes that some degree of immunity to the disease is not uncommon; on the other hand, he states that one attack so far from leading to immunity seriously predisposes towards subsequent attacks. The duration of the incubation period in his cases usually varied from two days to a week and was most often three days; in one case, however, it was apparently as long as 20 days. Five of the cases were fatal but in only one of these was a necropsy allowed and in this one there was extensive ulceration of the mucous membrane of the whole of the large intestine. Rectal examination by means of a speculum was made in a few of the cases, revealing extensive ulceration in some of them, while in others nothing was seen except scattered areas of inflammation without ulceration. Three types were observed clinically—mild, ordinary, and severe. The onset was usually sudden and associated with severe pain and great prostration. The motions were at first those of foul diarrhœa, soon changing to mucus, pure or blood-stained. Blood appeared in them in 150 of the cases, slough-like membranes in 17, and pus in 21. Tenesmus of more or less severity occurred in 271 and vomiting in 163. The urine was usually dark in colour, of high specific gravity, but free from albumin, sugar, or casts. In three cases, however, a definite cystitis was present. On examination of the abdomen there was usually tenderness at some spots over the large bowel, varying in individual cases, and shown in a diagram appended to the pamphlet with their relative frequency. Relapses and second attacks were found to be very common. The cases lasted from two days to a week as a rule but exceptional cases extended to a period of several months. In regard to treatment, Dr. Taylor states that the mild variety requires at most a slight purge. For the ordinary and the severe cases he commenced treatment by giving a purge; for this purpose he recommends calomel in preference to castor-oil or sulphate of magnesium. If abdominal pain were severe a hypodermic injection of morphine was given at once but if possible hot fomentations with or without laudanum were used in preference. In the majority of cases this treatment proved effective but when it was inadequate rectal injections of boric acid, one drachm to the pint, were given. At first these caused pain and were rapidly rejected but they soon gave relief if they were persevered with and repeated every three hours. If this treatment failed an injection of silver nitrate (ten grains to the pint of water) was given three times daily. Dr. Taylor is to be congratulated on the use that he made of his opportunities for studying the disease and on the interesting record which he has made of his cases.

[1] The Philippine Journal of Science, vol. i., No. 9, 1906.

## ANCIENT AND MODERN HINDU MEDICINE.

IN the March number of the *American Journal of Pharmacy* Dr. Anna S. Kugler deals in an interesting manner with ancient and modern Hindu medicine. The Hindus claim that the antiquity of their medical science exceeds that of any other people. It is comprised in the Ayur Veda, or "Science of Life," a work divided into 100 sections, each containing 1000 stanzas. Brahma communicated the Ayur Veda to Dakshprajapati who in turn passed it on to the Ashoini Kumars, the twin sons of the Sun. The oldest extant treatise on Indian medicine is that ascribed to a son of the Vedic saint Atreya, and hence called the Atreya Samhita. When asked questions by one of his pupils on the origin and treatment of disease, Atreya explained that the Ayur Veda could not be fully explained within the limits of human life and that his pupils would have to be content with his own composition which was completed within 1500 stanzas. The two most frequently quoted ancient medical writers among the Hindus are Charaka and Susruta, who dealt respectively with medicine and surgery. Charaka gave a list of 600 drugs which cause vomiting and purging, and described how remedies should be introduced into the body by means of enema syringes. No less than 125 surgical instruments are described in ancient Hindu works but the ancients are said to have understood so well the properties of drugs that surgical methods were seldom resorted to. Thus, abscesses were treated by plasters or poultices and urinary calculi by antilithics and diuretics. The Hindus were expert in plastic surgery, their operations including the transplanting of sensitive skin flaps and the forming of new ears and noses. Their skill in this direction was due to the punishment then so common in India of

cutting off the nose and ears. They were skilful in performing Cæsarean section and other abdominal operations, and are said to have practised inoculation against small-pox and to have discovered the art of cataract couching. The surgeon was recommended to acquire manual dexterity by cutting flowers, the hollow stems of plants and bladders filled with paste, and by putting sutures on skins. Health was thought to be promoted by the exhibition of an emetic once a fortnight, a purgative once a month, and blood-letting once a year. Among the causes of disease Karma, or Fate, was thought to take a prominent place. The murderer of a Brahmin was said to suffer from anæmia and a cow-killer from leprosy, thus assigning a physical cause for moral delinquency. In diagnosing disease palpation, percussion, and auscultation were recognised. In the palmy days of Buddhism in India, during the reign of Asoka in the third century, hospitals were erected and a regular system of medical administration was established throughout the country. With the decline of Buddhism these institutions disappeared. The contempt of the Mahomedan conquerors of Hindustan for the scientific knowledge of the Hindus and the diffusion of the European system of medicine contributed to a decline of Hindu medicine and surgery. The Sanscrit works became more inaccessible; imperfect copies were substituted, so that confidence was diminished, while superstition and quackery increased. Turning to the present condition of Hindu medicine Dr. Kugler describes native physicians in uncomplimentary terms. In a large majority of cases they are said to kill the patient by over-drugging or by poisoning with aconite, arsenic, or mercury. The excessive use of mercury accounts for the commonness of cases of ankylosis of the jaw, necrosis of the maxillary bones, and gangrene of the cheek. The native "doctors" frequently take advantage of the superstitions of the people who attribute many forms of nervous and mental diseases to devils. Hence the exorcising of devils and other methods of witchcraft are still practised. To-day there are comparatively few Hindu practitioners who endeavour to combine the modern European system with the teachings of the Ayur Veda. The majority practise hypocrisy and deception. Dr. Kugler hopes that as the years go by more attention will be paid to Ayur Veda medicine by all Indian students of medicine, so that what is good in it may be incorporated into a new system which, belonging neither to the East nor to the West, may be a universal system of medicine having for its object only the amelioration of human suffering and the prevention of disease.

## INFANTILE AND JUVENILE TABES.

IN an interesting paper published in the *Wiener Medizinische Wochenschrift* of March 21st Dr. Otto Marburg discusses the general characters of infantile and juvenile tabes and records a case in a girl aged two years. The patient was the fifth child of a man who had contracted syphilis 20 years before. The child was born healthy and developed in a normal manner until after the age of one year, when it was noticed that she did not see as well as before. Ophthalmoscopic examination at the time revealed the existence of atrophy of the optic nerve. It was also found that the child could no longer lift herself up or keep her head up, and that although the arms and legs could be moved she could not walk. Shortly afterwards she developed peculiar attacks of dyspnœa with crowing inspiration and marked cyanosis. She was admitted to hospital under Professor Escherich. On examination the child was noticed to be pale, fairly nourished, and of normal development. She lay quietly on her back and was quite unable to speak; she heard sounds, laughed from time to time, and took her food naturally. The pupils were of less than medium size, the left being larger than the right, and the reaction to light was sluggish. There was no disturbance of the sensibility to pain. The power of the movements of the limbs was apparently not disturbed but the muscles of the back and of the neck were weak, so that the child could not sit upright or hold her head erect. The muscles were in general hypotonic and the tendon reflexes were absent. From time to time attacks of laryngeal spasm developed. Electrical examination did not afford any evidence of tetany and the characteristic macular changes found in the Tay-Sachs form of amaurotic family idiocy were wanting. The case was therefore regarded as one of infantile tabes following on congenital syphilis. Dr. Marburg, who in 1903[1] was able to collect 34 cases from the literature, now gives references to 17 additional cases and discusses the general features of the condition as recorded in the total of 51 cases which he has thus collected. In 34 of these there was a history of congenital syphilis, while in four syphilis had been acquired; in the remainder either no details were given or there was no evidence of infection. In only 12 of the cases was there a history of tabes or paralysis in the parents. One very striking example is of special interest: a tabetic mother had a family of three, of whom the eldest son suffered from juvenile tabes, the second son from paralysis, and the daughter from cerebral syphilis. In the 50 cases in which the sex was stated 29 were girls and 21 were boys—a striking contrast to the sex incidence in adults. The greater the number of cases studied the more the general similarity of the symptoms to those of adults becomes apparent. Disturbances of sensation were observed in 64 per cent., Argyll Robertson pupils in 74 per cent., and loss of reflexes in 86 per cent.—figures which are strikingly similar to those in adults. An exception, however, must be made in regard to ataxy and Romberg's sign which were present only in 56 per cent. and then not in any great degree. It is possible, according to Dr. Marburg, that this peculiarity may be due to the relatively mild course of infantile tabes. Optic atrophy, on the other hand, occurred in 44 per cent. of the cases, which is more than double the frequency of that condition in tabes in adults. Disturbances of micturition occurred in 48 per cent. of the cases and in some these appeared to be the initial symptom. Dr. Marburg lays stress on the importance of congenital syphilis as the basis of severe organic affections of the nervous system and on the necessity for careful observation of unusual nervous manifestations in children of syphilitic inheritance.

## THE EARLY HISTORY OF THE HOME DEFENCE MOVEMENT.

AT the moment when the old order is giving place to the new in regard to the military forces for home defence it may be interesting to recall the fact that the Volunteer movement of 1852 owed its origin in no small degree to the active interest of the late Sir John Charles Bucknill, M.D., the alienist, whose name, coupled with that of Dr. Hack Tuke, are household words in the early history of scientific psychology. In the year 1852 a meeting was convened at Exeter, presided over by Lord Fortescue, to consider the necessity for the enrolment of a corps of citizen soldiers, especially with relation to coast defence. It was pointed out at that meeting that the last successful invasion of England—namely, that by William of Orange—was achieved by the landing of an army on the South Devon coast. Dr. Bucknill was the active spirit in this agitation and a motion was carried unanimously in favour of memorialising the War Office asking for permission to raise a force to be known as the Exeter and South Devon Volunteers. The required powers having been obtained, Dr.

[1] Wiener Klinische Wochenschrift, No. 47, 1903.

Bucknill was enrolled as the first recruit in the first regiment of Volunteers established on the new system in the United Kingdom. The corps was officially named the 1st Exeter and Devonshire Rifle Volunteers and proved the nucleus of the system which has now given place to the Territorial Force. His services in connexion with the movement were recognised by the erection by public subscription of a memorial embellished with a medallion portrait of the distinguished alienist in Northernhay, near Exeter Castle. It was unveiled by H.R.H. the Duke of Cambridge in 1895.

THE Ingleby lectures in connexion with the Faculty of Medicine of the University of Birmingham will be delivered on Thursdays, May 7th and 14th, at 4 o'clock, in the Medical Lecture Theatre of the University, by Mr. Christopher Martin, surgeon to the Birmingham and Midland Hospital for Women, who has taken for his subject Myoma of the Uterus.

## ROYAL COLLEGE OF PHYSICIANS OF LONDON.

### ELECTION OF PRESIDENT.

AN extraordinary Comitia was held on April 13th, Sir R. DOUGLAS POWELL, Bart., K.C.V.O., the President, being in the chair.

A communication was received from the secretary of the Burlington Fine Arts Club requesting the loan for exhibition of an illuminated manuscript Psalter in the possession of the College. The request was acceded to.

The PRESIDENT then delivered his annual address, in the course of which he referred to the Royal honours that had been conferred on Fellows, and also mentioned the medals and scholarships which had been given by the College during the year. The Harveian oration and the lectures delivered during the year were then mentioned and the gifts presented to the College were again acknowledged. A brief review was also given of the principal events which had occurred in relation to the affairs of the College. The President then read obituary notices of those Fellows who had died during the year: Dr. W. H. Ransom, F.R.S., Dr. E. Markham Skerritt, Dr. Robert Barnes, Surgeon-General Sir Joseph Fayrer, Bart., Dr. Julius Dreschfeld, Sir W. H. Broadbent, Bart., Dr. G. F. Elliott, Dr. H. Montague Murray, Sir Alfred B. Garrod, Dr. F. Willcocks, and Dr. Oswald A. Browne. The President then expressed his thanks to all the officers of the College for their services during the past year and acknowledged the courtesy which he had always received from the Fellows.

Dr. J. E. POLLOCK proposed a vote of thanks to Sir R. Douglas Powell for his address and for the services which he had rendered to the College during his year of office. This was seconded by Dr. NORMAN MOORE and carried unanimously.

The REGISTRAR (Dr. E. LIVEING) read the by-laws regulating the election of President. A ballot for President then took place, when Sir R. Douglas Powell was re-elected by a large majority.

The SENIOR CENSOR (Dr. D. FERRIER) delivered to Sir R. Douglas Powell the insignia of the office of President, and the PRESIDENT gave his faith to the College. He expressed his thanks to the Fellows for having re-elected him.

The PRESIDENT then dissolved the Comitia.

## MEDICINE AND THE LAW.

### *The Legal Liability of the Anæsthetist.*

THE legal aspects of the anæsthetist's position when death occurs during anæsthesia produced with a view to the performance of a surgical operation were discussed at some length by Mr. R. Henslowe Wellington in his paper on the subject read before the Medico-Legal Society and reported in THE LANCET of April 4th, p. 1008. In conclusion, the learned coroner summed up his views by saying that the administration of any anæsthetic, whether for a local or a general anæsthesia, by unqualified practitioners, which was carried on to a very large extent throughout the kingdom, was a grave public danger and should, perhaps, be made a penal offence by statute. He had before dealt with the present position of the person administering the anæsthetic in cases in which death has followed its use and had defined the circumstances rendering him criminally liable by a quotation from Archbold's "Criminal Pleadings," where the editor says that "It seems that if a person, whether he be a regular practitioner or not, honestly and *bona fide* perform an operation, or use a dangerous instrument, which causes the patient's death, he is not guilty of manslaughter; but if he be guilty of criminal misconduct arising from gross ignorance or criminal inattention, and not from a mere error of judgment then he will be guilty of manslaughter." Mr. Henslowe Wellington, although he made reference to the anæsthetist's liability to a civil action for damages, had before him mainly throughout his paper the question of a possible liability to prosecution upon a charge of manslaughter, rather than the risk of being sued under Lord Campbell's Act for civil damages. This, however, is a very real risk, and whether he deserves it or not an anæsthetist may be asked to pay damages by a widow in respect of the loss of her husband, and he may have a verdict found against him by a jury upon the civil question, although he has not been prosecuted for manslaughter and could not have been so prosecuted with any likelihood of conviction. The question of fact whether he has been guilty of negligence is one which a jury decides after the law has been explained by the judge, and a jury which might hesitate to send a fellow man to prison might desire that he should compensate a widow with an orphaned family for the result of an act which, to use general terms, he ought not to have done, or ought to have done better. Juries are composed of men with human sympathies and are not too always closely bound by legal definitions. The person without a medical qualification who administers an anæsthetic naturally and rightly runs more risk of an adverse verdict than the medical practitioner who does the same without having specially qualified himself to do so. Neither, however, can in any conceivable circumstances claim that he did not know that what he was doing involved possible danger to human life and each must be held to be aware to some extent of his own limitations. Without going into the question raised by Mr. Henslowe Wellington as to whether dentists qualified as such only should administer anything beyond nitrous oxide, it may be pointed out that anyone registered as a medical man or as a dentist who administers an anæsthetic has to consider that should a fatality occur it is quite possible that it will be suggested that he is liable for it criminally or, still more probably, civilly, and that he may then have the case put against him thus: that he undertook to do that which his training and experience did not qualify him to carry out successfully except in favourable circumstances; that at the same time his training and experience qualified him to know that unfavourable circumstances might arise and that a fatal result not only might but would be likely to follow upon his failure to recognise and to deal with them. The administration of anæsthetics by unqualified persons, referred to by Mr. Henslowe Wellington as a fit subject for legislation, is a public danger easily removeable. The present situation is that only persons duly qualified and supervised may sell certain deadly drugs, but that once sold they can be used with more or less dangerous effect by any person who may be rash enough to trifle with them. Inquiry of some kind into his conduct will ensue in all probability if death results from it, but not otherwise.

### *The Case of a "Canine Specialist."*

The Royal College of Veterinary Surgeons is to be congratulated upon having won an appeal of considerable importance to it. Some little time ago it prosecuted under the Veterinary Act, 1881, a man who treated the diseases of dogs at a house in Cambridge-road, Kingston-on-Thames. He displayed his name there on a board, with additions thus: "M. Collinson, Canine Specialist. Dogs and Cats treated for all Diseases." He was not a Member of the Royal College of Veterinary Surgeons and was not on the Register of veterinary surgeons, nor did he hold the veterinary certificate of the Highland and Agricultural Society of Scotland, and he was prosecuted under Section 17 of the Statute referred to, which

provides a penalty for anyone not qualified as above who "takes or uses the title of veterinary surgeon or veterinary practitioner, or any name, title, addition, or description stating that he is a veterinary surgeon or a practitioner of veterinary surgery or of any branch thereof or is specially qualified to practise the same." The Kingston magistrates, who stated a case for the consideration of the Divisional Court, were of the opinion that the inscription used by the defendant could not be said to "state" that he was "specially qualified" to practise a branch of veterinary surgery but the Divisional Court, presided over by Lord Alverstone, has now held otherwise and the case has been remitted to the magistrates in order that they may convict. It was a point of some difficulty in the opinion of the Divisional Court, and although the Lord Chief Justice was strongly of the opinion that the magistrates had decided wrongly Mr. Justice Darling and Mr. Justice Ridley, who sat with him to hear the appeal, felt grave doubts and were by no means ready to follow him. Lord Alverstone was of opinion that the legislature meant that a person is not to indicate that he is specially qualified to treat diseases of dogs unless he has the necessary qualification, and he went so far as to say that in his opinion the Veterinary Act was intended to stop the treatment of domesticated animals in return for fees by persons who are not qualified unless they tell the public so. A point for the defence which required consideration lay in the wording of the section quoted which forbids the person using the inscription to "state" that he is specially qualified. The preceding section, intended to prevent false representations that a person is a Fellow or Member of the Royal College of Veterinary Surgeons, imposes a penalty for "stating or implying" by means of any title or description added to a personal name that its owner is such a Fellow or Member. The omission of the word "implying" in the 17th Section was dwelt upon on behalf of the defendant as being intentional and as demanding that the statement of special qualification should be definite and not merely made by implication. However, the Divisional Court has given a decision which should not merely protect the Royal College of Veterinary Surgeons against the invasion of its privileges but should also have considerable effect in protecting dumb animals against unnecessary suffering at the hands of unqualified persons, for the practice of the unqualified must always depend to a large extent upon his power to advertise his alleged skill. The case has considerable interest for members of the medical profession in that it calls attention to the weakness of the protection afforded to them by their own Act of 1858, as compared with that granted in 1881 to veterinary surgeons. The medical man and the human beings who are his patients are only protected against the quack who uses titles or descriptions implying that he is registered according to the law and not against one who states that he is qualified in such terms as those used by the defendant at Kingston. But apparently Mr. Justice Ridley would not approve of any further effort to protect the medical profession and the public, for he is reported in the *Daily Mail* to have said that "there was many a quack who was as good as a doctor."

### *A Herbalist Sued Unsuccessfully by the Society of Apothecaries.*

At the Edmonton county court recently an action was brought by the Society of Apothecaries to recover a penalty of £20 from W. T. Gregory, a herbalist at Old Charlton, for attending, advising, and supplying medicine as an apothecary to a Billingsgate fish salesman who had died while being treated by him. The deceased had contracted blood poisoning through pricking his finger in handling skate, and after being attended by a medical man called in the defendant, who at one time was a fish salesman. Gregory undertook to cure him and applied plasters compounded with resin, turpentine, marsh-mallows, elderberries, and parsley. The defence was raised that the treatment thus accorded was surgical and not that of an apothecary, and his honour, Judge Tindal Atkinson, accepted this view of the matter, being of opinion that the case was surgical because the injury was sustained through an external cause, and because he thought that the defendant had acted as a surgeon in the treatment of what, he said, might be called a "minor surgical case." He accordingly gave judgment for the defendant, holding that he was not liable to pay the penalty claimed by the Society of Apothecaries. The case, like that of the "canine specialist" referred to above, shows the difficulty which such bodies as the Society of Apothecaries labour under in the effort to protect the public and their own members, difficulties which arise to some extent out of the use of loose and general expressions in Acts of Parliament. The decision arrived at seems to imply that acts which no surgeon would perform are surgical acts, and although the case no doubt required surgical treatment it cannot be said to have received it. The treatment afforded was, of course, not that which any "apothecary" of the present day would supply, but was at least as near akin to the treatment which an apothecary might be deemed likely to use as it was to that of a surgeon.

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, April 17th, 1830.

MEDICAL CORONERS—CASE OF JAMES BUTLER.

*To the Editor of* THE LANCET.

SIR,—The interest and advantage with which I have perused the excellent observations contained in your Journal, on the subject of non-medical coroners, induce me to submit to your notice some observations on a recent melancholy case, in which the life of an unhappy individual might have been saved, had there been in the country any public functionary whose peculiar duty was the investigation of such branches of jurisprudence as are connected with scientific knowledge.

The case to which I refer is that of James Butler, executed July 27, 1829, for firing the floor-cloth manufactory of Messrs. Downing at Chelsea, under very strong presumptive evidence as to his guilt, contradicted indeed by his strongest protestations of innocence to the last. When I first perused the details of his trial in the month of October last, I felt no difficulty in assigning as the probable cause of the conflagration for which he suffered, the spontaneous ignition of some of the material used in the process of the oil-cloth manufacture. Linseed-oil, lamp-black, and tow (substances largely used in the manufacture), are, under peculiar circumstances of juxta-position, very favourable to this phenomenon, as may also be considered the scrapings of the floor-cloth, often permitted to accumulate in considerable heaps upon the floor.

Such an opinion, if stated at the time of the trial, and supported by the various cases in which combustion has been known to arise spontaneously, and produce many lamentable conflagrations, could not, I consider, fail to have excited the attention of the judge and jury on the occasion; and although they might not by them have been deemed sufficient ground for another trial, would yet have arrested their decision, and excited an additional inquiry. This opinion I some time since stated in a letter to the editor of a morning paper, which was the cause of my introduction to a benevolent individual who had commenced an investigation into the case, and who has since, by rebutting every part of the moral evidence produced against Butler at his trial, succeeded in establishing the fact of his innocence beyond a doubt, and convinced me of the correctness of my opinion, as to the accidental origin of the conflagration.

I do not consider that, from the nature of the evidence before the jury, their verdict can, in any way, be impugned; a mystery hung over the case, which could only be removed by referring the calamity to a cause, of the existence of which they were unacquainted; but it is a melancholy instance of a case in which an irreparable injury has been inflicted upon an individual and his family, because no competent authority existed to intercept the necessary uncompromising denouncement of our penal code. As such, deeming that public justice requires that publicity should be given to the case, I beg to submit my observations to the readers of your invaluable Journal.

I am, Sir,
Your obedient servant,
A. BOOTH, Operative Chemist.

20, Church-street, Shoreditch,
April 3.

Mr. Booth's talents as a chemist, and the importance of the subject on which he writes, are sufficient to claim immediate insertion for his letter. It is right, however, to add, that we have but a slight acquaintance with the facts to which the writer adverts.—ED. L.

## LYNN THOMAS AND SKYRME FUND.

THE following subscriptions have been received between April 3rd and April 10th by Mr. William Sheen, M.S. Lond., F.R.C.S. Eng. (2, St. Andrew's-crescent, Cardiff), honorary secretary to the fund.

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Edmond Murphy, Cork.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY meeting of the Council was held on April 9th, Mr. HENRY MORRIS, the President, being in the chair.

Dr. ARTHUR KEITH was introduced and he made the declaration required on his admission to the office of Conservator of the Museum.

The best thanks of the Council were given to Mr. R. H. Burne for his services in carrying on the duties of Conservator of the Museum during the illness and since the death of Professor C. Stewart and an honorarium was presented to him. Mr. Burne has been anatomical assistant in the Museum since 1892.

The best thanks of the Council were given to Dr. Albert A. Gray of Glasgow for presenting to the Museum his collection of specimens of the membranous labyrinths of vertebrata.

It was resolved to continue the arrangements for supplying tea in the library.

The Jacksonian prize for the year 1907 was not awarded. On the recommendation of the Jacksonian Committee the following subject was selected for the Jacksonian prize for the year 1909: The Treatment of Surgical Affections by Vaccines and Antitoxins.

A vote of thanks was given to Mr. Edmund Owen for having acted as visitor to the examinations of the Egyptian Medical School for the year 1907.

In accordance with the recommendation of the Nomination Committee it was resolved that the deans of the Medical Faculties of the Universities of Leeds, Liverpool, and Sheffield should be informed that the Council, having consulted the several medical schools in reference to the proposal to alter the date of the Primary Examinations for the Fellowship, and having considered the various suggestions made, is of opinion that it is undesirable to make any change. The opinions expressed by the several schools varied greatly. With regard to the spring examination at present held in May, five schools suggested no change, four suggested April, two June, two March, one school suggested March or July, and one July. With regard to the winter examination held in November, seven schools suggested no change, four schools preferred September, and four schools December.

The Council proceeded to elect to the Fellowship Members of 20 years' standing and the two following Members were chosen—Mr. Thomas James Walker, consulting surgeon to Peterborough Infirmary; and Mr. Henry Pottinger Keatinge, director of the Egyptian Government Medical School at Cairo.

Mr. Bernard Pitts was re-elected a member of the Board of Examiners in Dental Surgery.

The PRESIDENT reported the delivery of the Hunterian lecture by Mr. W. Sampson Handley and of the Arris and Gale lectures by Dr. F. A. Bainbridge and Mr. M. Greenwood, jun.

A letter was received from Mr. J. Ward Cousins reporting the proceedings of the Central Midwives Board during the year. The best thanks of the Council were given to Mr. Ward Cousins for his services as the representative of the College on the Central Midwives Board.

It was decided not to hold a Fellows' dinner this year.

## VITAL STATISTICS.

### VITAL STATISTICS OF LONDON DURING MARCH, 1908.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 6·8 per 1000 of the population, estimated at 4,795,757 persons in the middle of the year; in the three preceding months the rates were 9·1, 8·4, and 7·8 per 1000 respectively. The lowest rates last month were recorded in Kensington, Hammersmith, Chelsea, Hampstead, Islington, Southwark, and Lambeth; and the highest rates in the City of London,

## ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1908.

*(Specially compiled for* THE LANCET.)

| CITIES AND BOROUGHS. | Estimated population in the middle of 1908. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. | Deaths of Infants under one year to 1000 births. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Typhus fever. | Enteric fever. | Other continued fevers. | Diarrhœa. | Total. | Annual rate per 1000 persons living. | | |
| LONDON .. ... ... ... ... ... ... | 4,795,787 | 1 | 1486 | 641 | — | 58 | — | 16 | 368 | 8 | 2518 | 6·8 | — | 135 | 50 | 65 | 135 | — | 10 | — | 60 | 465 | 1·2 | 5910 | 16·1 | 68 | — |
| *West Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington ... ... ... ... ... ... | 150,623 | — | 43 | 13 | — | 2 | — | — | 5 | — | 63 | 5·4 | — | 5 | 1 | 2 | — | — | — | — | — | 8 | 0·7 | 173 | 14·9 | 132 | — |
| Kensington ... ... ... ... ... ... | 182,752 | — | 24 | 16 | — | 2 | — | — | 6 | — | 48 | 3·4 | — | 3 | — | — | 1 | — | — | — | 3 | 7 | 0·5 | 201 | 14·3 | 103 | — |
| Hammersmith ... ... ... ... ... ... | 124,012 | — | 18 | 12 | — | 1 | — | 1 | 5 | — | 37 | 3·9 | — | 5 | — | 1 | — | — | 2 | — | 1 | 9 | 0·9 | 140 | 14·7 | 64 | — |
| Fulham ... ... ... ... ... ... | 171,562 | — | 54 | 33 | — | 1 | — | 2 | 8 | — | 98 | 7·4 | — | 16 | — | 4 | 3 | — | 2 | — | — | 26 | 2·0 | 179 | 13·6 | 76 | — |
| Chelsea ... ... ... ... ... ... | 75,049 | — | 17 | 9 | — | — | — | — | 3 | — | 29 | 5·0 | — | — | 1 | — | 3 | — | — | — | 1 | 5 | 0·9 | 84 | 14·6 | 65 | — |
| City of Westminster ... ... ... ... | 170,545 | — | 54 | 14 | — | 2 | — | 1 | 5 | 1 | 77 | 5·9 | — | 1 | 2 | 1 | — | — | — | — | 2 | 6 | 0·5 | 215 | 16·4 | 112 | — |
| *North Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone ... ... ... ... ... | 126,867 | — | 30 | 12 | — | — | — | 1 | 17 | — | 60 | 6·2 | — | 2 | 3 | 1 | — | — | — | — | 3 | 9 | 0·9 | 172 | 17·7 | 55 | — |
| Hampstead ... ... ... ... ... ... | 92,654 | — | 24 | 8 | — | — | — | — | 4 | — | 36 | 5·1 | — | 1 | — | — | 1 | — | — | — | — | 2 | 0·3 | 70 | 9·8 | 51 | — |
| St. Pancras ... ... ... ... ... ... | 237,076 | — | 74 | 23 | — | 5 | — | — | 7 | — | 109 | 6·0 | — | 8 | 1 | 2 | 14 | — | — | — | 3 | 28 | 1·5 | 374 | 20·6 | 127 | — |
| Islington ... ... ... ... ... ... | 349,091 | — | 71 | 34 | — | 4 | — | 1 | 21 | — | 131 | 4·9 | — | 7 | 3 | 1 | 4 | — | 1 | — | 6 | 22 | 0·8 | 435 | 16·2 | 111 | — |
| Stoke Newington ... ... ... ... ... | 64,015 | — | 23 | 7 | — | — | — | — | — | — | 30 | 7·2 | — | — | — | — | — | — | — | — | 1 | 1 | 0·2 | 71 | 17·1 | 122 | — |
| Hackney ... ... ... ... ... ... | 235,253 | 1 | 88 | 34 | — | 2 | — | 1 | 17 | — | 143 | 7·9 | — | 10 | — | 7 | 2 | — | — | — | 6 | 26 | 1·4 | 264 | 14·6 | 172 | — |
| *Central Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn ... ... ... ... ... ... | 54,466 | — | 12 | 4 | — | 1 | — | 1 | 5 | — | 23 | 5·5 | — | 2 | 1 | — | — | — | — | — | — | 3 | 0·7 | 67 | 20·8 | 81 | — |
| Finsbury ... ... ... ... ... ... | 96,007 | — | 21 | 16 | — | 1 | — | — | 12 | 2 | 52 | 7·1 | — | 3 | 2 | 3 | 5 | — | 1 | — | 2 | 16 | 2·2 | 141 | 19·1 | 76 | — |
| City of London ... ... ... ... ... | 19,252 | — | 4 | 5 | — | 1 | — | — | 2 | — | 12 | 8·1 | — | — | — | 1 | 1 | — | — | — | — | 2 | 1·4 | 37 | 25·1 | — | — |
| *East Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch ... ... ... ... ... ... | 116,227 | — | 31 | 17 | — | 1 | — | — | 7 | — | 56 | 6·3 | — | 11 | 2 | — | — | — | — | — | 2 | 15 | 1·7 | 179 | 20·3 | 107 | — |
| Bethnal Green ... ... ... ... ... ... | 131,066 | — | 52 | 25 | — | 5 | — | — | 20 | — | 132 | 13·1 | — | 3 | 2 | 7 | 7 | — | 1 | — | 3 | 23 | 2·3 | 172 | 19·1 | 129 | — |
| Stepney ... ... ... ... ... ... | 310,706 | — | 143 | 57 | — | 4 | — | — | 38 | — | 242 | 10·2 | — | 18 | 2 | 4 | 24 | — | — | — | 6 | 54 | 2·3 | 422 | 17·7 | 91 | — |
| Poplar ... ... ... ... ... ... | 171,516 | — | 81 | 32 | — | 1 | — | 2 | 16 | — | 132 | 10·0 | — | 1 | 1 | 3 | 14 | — | — | — | — | 19 | 1·4 | 226 | 17·2 | 96 | — |
| *South Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark ... ... ... ... ... ... | 210,442 | — | 32 | 18 | — | 2 | — | — | 11 | 1 | 64 | 4·0 | — | 4 | 3 | 2 | 9 | — | — | — | 5 | 23 | 1·4 | 358 | 19·1 | 122 | — |
| Bermondsey ... ... ... ... ... ... | 127,910 | — | 39 | 13 | — | 1 | — | — | 7 | — | 60 | 6·1 | — | 3 | 1 | 4 | — | — | — | — | 2 | 10 | 1·0 | 199 | 20·3 | 148 | — |
| Lambeth ... ... ... ... ... ... | 321,344 | — | 95 | 16 | — | 3 | — | — | 6 | 1 | 121 | 4·9 | — | 9 | 5 | 3 | 6 | — | — | — | 2 | 25 | 1·0 | 387 | 16·7 | 79 | — |
| Battersea ... ... ... ... ... ... | 183,873 | — | 57 | 32 | — | 3 | — | 1 | 15 | 1 | 109 | 7·7 | — | 3 | 3 | 4 | 2 | — | 1 | — | 4 | 17 | 1·2 | 219 | 16·6 | 124 | — |
| Wandsworth ... ... ... ... ... ... | 288,566 | — | 83 | 63 | — | 5 | — | — | 20 | — | 171 | 7·7 | — | 4 | 5 | 5 | 9 | — | — | — | 1 | 24 | 1·1 | 264 | 12·8 | 90 | — |
| Camberwell ... ... ... ... ... ... | 280,022 | — | 85 | 33 | — | 3 | — | 2 | 14 | 2 | 139 | 6·5 | — | 8 | 2 | 4 | 8 | — | — | — | — | 26 | 1·2 | 315 | 14·7 | 100 | — |
| Deptford ... ... ... ... ... ... | 117,539 | — | 48 | 20 | — | 1 | — | — | 11 | — | 80 | 8·9 | — | 2 | 2 | 3 | 3 | — | — | — | — | 10 | 1·1 | 136 | 15·1 | 65 | — |
| Greenwich ... ... ... ... ... ... | 109,110 | — | 29 | 24 | — | 4 | — | 1 | 11 | — | 69 | 8·2 | — | — | 1 | 2 | 5 | — | 2 | — | — | 10 | 1·2 | 119 | 14·2 | 167 | — |
| Lewisham ... ... ... ... ... ... | 156,627 | — | 71 | 36 | — | 2 | — | 1 | 8 | — | 118 | 9·8 | — | 9 | 2 | 3 | 3 | — | — | — | 1 | 18 | 1·5 | 166 | 13·0 | 75 | — |
| Woolwich ... ... ... ... ... ... | 131,246 | — | 55 | 14 | — | 1 | — | 1 | 6 | — | 75 | 7·4 | — | — | 1 | 1 | 7 | — | — | — | 2 | 11 | 1·1 | 125 | 12·4 | 70 | — |
| Port of London ... ... ... ... | — | — | — | 1 | — | — | — | — | 1 | — | 2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

Bethnal Green, Stepney, Poplar, Deptford, Greenwich and Lewisham. A further considerable decline in the prevalence of scarlet fever was recorded last month; among the various metropolitan boroughs this disease was proportionally most prevalent in Stoke Newington, Bethnal Green, Stepney, Poplar, Deptford, Lewisham, and Woolwich. The Metropolitan Asylums hospitals contained 3150 scarlet fever patients at the end of last month, against 4956, 3866, and 3591 at the end of the three preceding months; the weekly admissions averaged 336, against 458, 423, and 410 in the three preceding months. The prevalence of diphtheria has also showed a continued decline in recent months; the greatest proportional prevalence of this disease last month was recorded in Fulham, the City of London, Bethnal Green, Poplar, Wandsworth, Greenwich, and Lewisham. The number of diphtheria patients remaining under treatment in the Metropolitan Asylums hospitals, which had been 1168, 1135, and 1184 at the end of the three preceding months, had declined to 1081 at the end of March; the weekly admissions averaged 131, against 155, 150, and 149 in the three preceding months. Enteric fever was slightly less prevalent than it had been in the previous month; among the several metropolitan boroughs the greatest proportional prevalence of this disease was recorded in St. Pancras, Bethnal Green, Battersea, Wandsworth, and Greenwich. There were 73 enteric fever patients under treatment in the Metropolitan Asylums hospitals at the end of last month, against 119, 96, and 79 at the end of the three preceding months; the weekly admissions averaged 10, against 18, 12, and 10 in the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, Finsbury, Bethnal Green, Stepney, and Greenwich. The 16 cases of puerperal fever notified during the month included two belonging to Fulham, two to Poplar, and two to Camberwell. Of the eight cases notified as cerebro-spinal meningitis two belonged to Finsbury and two to Camberwell.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending March 28th the deaths of 5910 persons belonging to London were registered, equal to an annual rate of 16·1 per 1000; in the three preceding months the rates were 15·2, 17·5, and 17·4 per 1000. The death-rates last month in the several boroughs ranged from 9·8 in Hampstead, 12·4 in Woolwich, 12·8 in Wandsworth, 13·0 in Lewisham, and 13·6 in Fulham, to 19·1 in Finsbury, in Bethnal Green, and in Southwark, 20·3 in Shoreditch and in Bermondsey, 20·6 in St. Pancras, 20·8 in Holborn, and 25·1 in the City of London. The 5910 deaths from all causes included 455 which were referred to the principal infectious diseases; of these, 135 resulted from measles, 50 from scarlet fever, 65 from diphtheria, 135 from whooping-cough, 10 from enteric fever, and 60 from diarrhœa. The lowest death-rates last month from these diseases were recorded in Paddington, Kensington, the City of Westminster, Hampstead, Stoke Newington, and Holborn; and the highest rates in St. Pancras, Fulham, Finsbury, Shoreditch, Bethnal Green, Stepney, and Lewisham. The 135 deaths from measles were 100 fewer than the corrected average number in the corresponding periods of the five years; this disease was proportionally most fatal last month in Hammersmith, Fulham, Hackney, Shoreditch, Stepney, and Lewisham. The 50 fatal cases of scarlet fever exceeded by 20 the corrected average number; among the various metropolitan boroughs the greatest proportional mortality from this disease was registered in St. Marylebone, Finsbury, Shoreditch, Bermondsey, Wandsworth, and Deptford. The 65 deaths from diphtheria were six in excess of the corrected average number for the corresponding weeks of 1902–06; the highest death-rates from this disease were recorded in Fulham, Hackney, Finsbury, Bethnal Green, Battersea, and Deptford. The 135 fatal cases of whooping-cough showed a decline of 54 from the corrected average number; this disease was proportionately most fatal in St. Pancras, Finsbury, Bethnal Green, Stepney, Poplar, Southwark, Greenwich, and Woolwich. The ten deaths referred to "fever" were slightly fewer than the corrected average number in the corresponding period of the five preceding years; of these ten deaths, two belonged to Hammersmith, two to Fulham, two to Greenwich, and one each to Islington, Finsbury, Bethnal Green, and Battersea. The 60 fatal cases of diarrhœa were equal to the average number; the greatest proportional mortality from this disease was recorded in St. Marylebone, Hackney, Finsbury, Bethnal Green, Southwark, and Battersea. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was more than 22 per cent. below the average.

Infant mortality, measured by the proportion of deaths under one year of age to registered births, was equal to 98 per 1000. No deaths among children at this age were registered in the City of London. The lowest rates of infant mortality were recorded in Hammersmith, Chelsea, Hampstead, Deptford, and Woolwich; and the highest rates in Paddington, the City of Westminster, St. Pancras, Stoke Newington, Bethnal Green, Southwark, Bermondsey, and Battersea.

## THE SERVICES.

### APPOINTMENT OF DIRECTOR-GENERAL OF THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

Inspector-General James Porter, M.D., C.B., has been appointed Director-General of the Medical Department of the Royal Navy in succession to Inspector-General Sir Herbert M. Ellis, K.C.B., who has resigned. The new Director-General entered the service as surgeon in 1877, was promoted to Staff Surgeon in 1889, and Fleet Surgeon in 1898. In 1900 he was promoted to the rank of Deputy Inspector-General and two years ago he became Inspector-General. He has been principal medical officer at Gibraltar, Chatham, and Haslar, while in a recent issue of THE LANCET we called attention to the constant war services of this distinguished officer. The official record in "The Royal Navy List" is as follows:—

Surgeon of *Orontes* during Egyptian war, 1882 (Egyptian medal, Khedive's Bronze Star); served on shore with the Royal Marine Battalion defending Suakin, from May, 1884, till the battalion was recalled in May, 1885, and was engaged in the operations in the Eastern Soudan, 1884–85; present at the actions at Hasheen, March 20th, 1885; attack on Sir J. McNeill's Zareba, Tulufik, March 22nd; the attack on the square of Guards and Marines, March 24th, and at the taking and burning of Tamaai, April 3rd (Suakin, 1885, To Frek Clasps); landed from the *Doris* during the Boer war, 1899–1900, and was in medical charge between Oct. 20th, 1899, and Oct. 12th, 1900, of the naval forces employed—(1) in defence of Stormberg; (2) in Lord Methuen's advance from Belmont to Magersfontein; (3) in Lord Roberts's advance from Enslin to Belfast *vid* Klip Drift, Paardeberg, Pretoria, &c.; (4) with General French's column from Belfast to Barberton *vid* Carolina; medal with eight clasps inscribed "Belmont, Modder River, Relief of Kimberley, Paardeberg, Driefontein, Johannesburg, Diamond Hill, Belfast"; present at Graspan (with the assault), Magersfontein, Poplar Grove, Capture of Pretoria; twice mentioned in despatches; promoted to Deputy-Inspector of Hospitals, November, 1900, for above services; C.B., June 26th, 1902.

We feel assured that the Medical Department of the Royal Navy will be strengthened by all possible means under his dispensation.

### ROYAL NAVY MEDICAL SERVICE.

The following appointments are notified:—Inspector-General: T. D. Gimlette, C.B., to Haslar Hospital. Surgeon: A. R. Schofield to the *Ringdove* on recommissioning. Civil Practitioner: H. H. Jackson to be Surgeon and Agent at Newbiggin. Fleet Surgeons: John Menary to the *Vengeance*, on recommissioning; and H. B. Marriott to the *Doris*. Staff Surgeons: R. W. Stanistreet to the *Pandora* and to the *Perseus*, on recommissioning; C. J. E. Cock to the *Pandora*; and E. F. Mortimer to the *Vindictive*, on recommissioning. Surgeon: H. B. German to the *Vengeance*, on recommissioning.

### ROYAL ARMY MEDICAL CORPS.

Major R. J. Blackham has been appointed to officiate as specialist sanitary officer, Western Area, Southern Command, during the absence on four months' leave of Lieutenant-Colonel Caldwell.

Lieutenant-Colonel Delaware L. Irvine is placed on retired pay (dated March 28th, 1908).

### MEDICAL AND HOSPITAL SERVICES FOR THE BRITISH ARMY.

Accompanying the army estimates for the financial year commencing April 1st, 1908, is a statement summarising the total provision made therein for medical and hospital services as follows: 1. Medical establishment (officers, £576,700; warrant officers, non-commissioned officers, and men, £344,900; nurses, civilians, &c., £113,100), £1,034,700. 2. Royal Army Medical Corps, Militia, £21,900. 3. Medical establishment of the Territorial Force, £74,000. 4. Medical staff at War

Office, educational establishments, &c., £22,600. 5. Medicines, instruments, &c., except as in 1 and 2, £18,000. 6. Barrack services for hospitals, £29,000. 7. Hospital provisions, medical comforts, &c., £115,000. 8. Fuel, light, and water for hospitals, £25,000. 9. Hospital clothing, £2000. 10. Hospital stores and field hospital equipment, £10,700. 11. Works services, except maintenance of barracks included under (1), £81,800. Total, £1,434,700. The following shows the pay and allowances (for servant, lodging, fuel and light, and forage and stabling) per annum of medical officers in the army at home: Surgeon-General, £1447 16*s.* 3*d.*; Colonel, £1008 16*s.* 1*d.*; Lieutenant-Colonel (promoted before Jan. 9th, 1907, and specially selected for increased pay after eight years' service abroad), £802 9*s.* 7*d.*; Lieutenant-Colonel, £711 4*s.* 7*d.*; ditto (after three years' service if promoted on or after Jan. 9th, 1907), £802 9*s.* 7*d.*; Major, £583 9*s.* 7*d.*; ditto (after three years' service as such), £629 2*s.* 1*d.*; ditto (after 20 years' service if promoted before Jan. 9th, 1907, £702 2*s.* 1*d.*; Captain, £372 1*s.* 9*d.*; ditto (after seven years' full pay service), £399 9*s.* 3*d.*; ditto (after 10 years' full pay service), £472 9*s.* 3*d.*; Lieutenant on probation and Lieutenant, £325 19*s.* 2½*d.*; Quartermaster (minimum), £234 14*s.* 2½*d.*; ditto (maximum), £387 5*s.* 10*d.*

## INDIAN MEDICAL SERVICE.

The King has approved of the following promotions and admissions to the Indian Medical Service:—Captains to be Majors: Victor Edward Hugh Lindesay (dated July 29th, 1907), Chintaman Ramchandra Bakhle, Roger Parker Wilson, Krisnaji Vishnoo Kukday, Christopher Dering Dawes, Clarence Barrymore Harrison, Nicholas Purcell O'Gorman Lalor, Thomas Henry Symons, Ernest Reinhold Rost, Hugh Ainsworth, Frank Addinsell Smith, John Wolfran Cornwall, Alfred Miller, Frederick Arthur Lucas Hammond, Sydney Price James, and Peter Dee (dated Jan. 29th, 1908). Lieutenants to be Captains: Arthur Francis Hamilton, Arthur Denham White, Michael Foster Reaney, Ralph Koper White, Norman Methven Wilson, John Stevenson O'Neil, Mathew Robert Cecil MacWatters, William Herbert Boalth, George Allick Soltau, John Cunningham, Herman Falk, and Charles Joseph Coppinger (dated Feb. 1st, 1908). To be Lieutenants: Hugh William Acton, Vivian Bartley Green-Armytage, Arthur Norman Dickson, Alexander Glover Coullie, Alexander James Hutchison Russell, Robert Ernest Wright, Dewan Hakumat Rai, William Hunter Riddell, Arthur Batoum Zorab, Arnold Thomas Densham, Frederic Allan Barker, Arthur Waltham Howlett, Arnold Newall Thomas, and Francis Shingleton Smith (dated July 27th, 1907).

The promotion of Major Robert Frazer Standage is antedated to Jan. 29th, 1907.

The King has approved of the retirement from the service of the following officers: Surgeon-General William Richard Browne, C.I.E. (dated April 1st, 1908); Lieutenant-Colonel William Frederick Thomas (dated Jan. 6th, 1908); Lieutenant-Colonel Sir Richard Havelock Charles, K.C.V.O. (dated March 20th, 1908); Lieutenant-Colonel Alfred William Alcock, C.I.E. (dated Dec. 29th, 1907); Lieutenant-Colonel Francis Wyville Thomson (dated Feb. 28th, 1908); Lieutenant-Colonel Frederick George Maidment (dated March 21st, 1908); and Lieutenant-Colonel John Charles Lamont (dated March 10th, 1908).

## VOLUNTEER CORPS.

*Royal Garrison Artillery (Volunteers):* 1st Banff: Surgeon-Lieutenant John H. Stephen to be Surgeon-Captain (dated March 13th, 1908). 6th Lancashire: Surgeon-Captain Francis W. Bailey resigns his commission (dated March 9th, 1908). Francis William Bailey (late Surgeon-Captain) to be Captain (dated March 9th, 1908).

*Rifle:* The Queen's Rifle Volunteer Brigade, The Royal Scots (Lothian Regiment): Surgeon-Major John Pirie resigns his commission (dated March 16th, 1908). 2nd Volunteer Battalion, The Northumberland Fusiliers: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Adam Wilson (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, Tyne Volunteer Infantry Brigade) resigns his commission with permission to retain his rank and to wear the prescribed uniform (dated March 4th, 1908). 24th Middlesex Volunteer Rifle Corps: Surgeon-Major Charles Graham Grant to be Surgeon-Lieutenant-Colonel (dated March 16th, 1908).

## THE TERRITORIAL FORCE.

An Order in Council published in the *London Gazette* of April 10th gives the names under which certain medical units will be known on transference to the Territorial Force:—

| Units of Volunteers. | Units of the new Territorial Force. | Name of County Association. |
|---|---|---|
| Aberdeen Companies, R.A.M.C. (Volunteers). | 1st Highland Field Ambulance, R.A.M.C. | City of Aberdeen. |
| Seaforth and Cameron Bearer Company. | Highland Mounted Brigade Field Ambulance, R.A.M.C. | Inverness-shire. |
| Gordon Bearer Company. | 2nd Highland Field Ambulance, R.A.M.C. | City of Aberdeen. |
| Black Watch Bearer Company. | 3rd Highland Field Ambulance, R.A.M.C. | City of Dundee. |
| Glasgow Companies, R.A.M.C. (Volunteers). | Lowland Mounted Brigade Field Ambulance, R.A.M.C. | City of Glasgow. |
| Argyll and Sutherland Bearer Company. | 1st Lowland Field Ambulance, R.A.M.C. | |
| Highland Light Infantry Bearer Company. | 2nd Lowland Field Ambulance, R.A.M.C. | |
| 1st Lothian Bearer Company. | 3rd Lowland Field Ambulance, R.A.M.C. | City of Edinburgh. |
| Manchester Companies, R.A.M.C. (Volunteers). | 1st East Lancashire Field Ambulance, R.A.M.C. | Lancashire. |
| Manchester Bearer Company. | | |
| North-East Lancashire Bearer Company. | 2nd East Lancashire Field Ambulance, R.A.M.C. | |
| Lancashire Fusilier Bearer Company. | 3rd East Lancashire Field Ambulance, R.A.M.C. | |
| Liverpool Bearer Company. | 1st West Lancashire Field Ambulance, R.A.M.C. | |
| | 2nd West Lancashire Field Ambulance, R.A.M.C. | |
| Lancaster and Border Bearer Company. | 3rd West Lancashire Field Ambulance, R.A.M.C. | Lancashire and Westmorland. |
| Cheshire Bearer Company. | Welsh Border Mounted Brigade Field Ambulance, R.A.M.C. | Cheshire. |
| Welsh Border Bearer Company. | South Wales Mounted Brigade Field Ambulance, R.A.M.C. | Herefordshire. |
| Welsh Bearer Company. | 1st Welsh Field Ambulance, R.A.M.C. | Glamorganshire. |
| South Wales Border Bearer Company. | 3rd Welsh Field Ambulance, R.A.M.C. | Monmouthshire. |
| Leeds Companies, R.A.M.C. (Volunteers). | 1st West Riding Field Ambulance, R.A.M.C. | West Riding of Yorkshire. |
| | 2nd West Riding Field Ambulance, R.A.M.C. | |
| South Yorks Bearer Company. | Yorkshire Mounted Brigade Field Ambulance, R.A.M.C. | |
| West Yorks Bearer Company. | | |
| Sherwood Foresters Bearer Company. | 1st North Midland Field Ambulance, R.A.M.C. | Derbyshire. |
| Leicester and Lincoln Bearer Company. | 2nd North Midland Field Ambulance, R.A.M.C. | Leicestershire. |
| Stafford Bearer Company. | 3rd North Midland Field Ambulance, R.A.M.C. | Staffordshire. |
| Home Counties Bearer Company. | 1st South Midland Mounted Brigade Field Ambulance, R.A.M.C. | Buckinghamshire. |
| Worcester and Warwick Bearer Company. | 1st South Midland Field Ambulance, R.A.M.C. | Warwickshire. |
| Wilts and Dorset Bearer Company. | 1st South-Western Mounted Brigade Field Ambulance, R.A.M.C. | Wiltshire. |
| Gloucester and Somerset Bearer Company. | 2nd South-Western Mounted Brigade Field Ambulance, R.A.M.C. | Somersetshire. |
| Devon Bearer Company | 1st Wessex Field Ambulance, R.A.M.C. | Devonshire. |
| | 2nd Wessex Field Ambulance, R.A.M.C. | |
| Bedford Bearer Company. | Eastern Mounted Brigade Field Ambulance, R.A.M.C. | Bedfordshire. |
| Harwich Bearer Company. | 1st East Anglian Field Ambulance, R.A.M.C. | Suffolk. |

TERRITORIAL FORCE—(*Continued*).

| Units of Volunteers. | Units of the new Territorial Force. | Name of County Association. |
|---|---|---|
| Maidstone Companies, R.A.M.C. (Volunteers). | South-Eastern Mounted Brigade Field Ambulance, R.A.M.C.<br>1st Home Counties Field Ambulance, R.A.M.C.<br>2nd Home Counties Field Ambulance, R.A.M.C. | Kent. |
| East Surrey Bearer Company. | 3rd Home Counties Field Ambulance, R.A.M.C. | Surrey. |
| Sussex and Kent Bearer Company. | 2nd Eastern General Hospital, R.A.M.C. | Sussex. |
| 2nd London Bearer Company. | London Mounted Brigade Field Ambulance, R.A.M.C. | County of London. |
| 3rd London Bearer Company. | 1st London Field Ambulance, R.A.M.C. | City of London. |
| 4th City of London Bearer Company. | 2nd London Field Ambulance, R.A.M.C. | |
| London Companies R.A.M.C. (Volunteers). | 3rd London Field Ambulance, R.A.M.C. | County of London. |
| Woolwich Companies R.A.M.C. (Volunteers). | 4th London Field Ambulance, R.A.M.C.<br>5th London Field Ambulance, R.A.M.C.<br>6th London Field Ambulance, R.A.M.C. | |

THE RECOGNITION OF THE MEDICAL PROFESSION IN THE ARMY.

Referring to the compliment paid so graciously to Colonel D. Bruce, C.B., R.A.M.C., when Queen Alexandra and the Dowager Empress Marie of Russia visited his laboratory at the Royal Military Hospital recently, the *Army and Navy Gazette* says it "was richly deserved. ..... Early in his career as an army medical officer he came to recognise the extent of the mischief done to human life by diseases which he held to be preventable, and he set to work in a modest way to do what he could to alleviate suffering. At that time the War Office had scarcely been brought to realise that the army doctor had any cause to complain of the position assigned to him in our military system. He was regarded as a 'grumbler' only, no thought being paid to the real reasons for his dissatisfaction with his position—that it gave him no proper opportunities for the exercise of professional skill. When changes came in the attitude of those at headquarters Colonel Bruce was one of the first to avail himself of his chances for prosecuting his inquiries, and the success which has hitherto attended his investigations may be taken as proof of the soundness of the better methods that now prevail."

THE COOKING ARRANGEMENTS AT CHATHAM NAVAL HOSPITAL.

Mr. Jenkins, in the House of Commons, recently asked the Secretary to the Admiralty whether he was aware that at the Chatham Naval Hospital there are at present only one cook and an assistant engaged in serving the 320 patients and nine officers, which results in badly cooked food being served to the patients, thus retarding their recovery; and whether he would take steps to have a more adequate staff provided. Mr. E. Robertson, in his reply, said that the staff actually employed, which consisted of one cook and two assistant cooks, was considered adequate and compared favourably with those at Haslar and Plymouth. He could not find that there was any justification for the suggestion contained in the honourable Member's question. Parliamentary answers are so often evasive that we hardly think Mr. Robertson expected to be understood literally in his reply. Bearing in mind that in a large general hospital, always having a certain proportion of serious cases under treatment, the services of a trained cook are indispensable both night and day, it can scarcely be maintained that the Admiralty scale, as stated by Mr. Robertson, errs on the side of extravagance or even of liberality. And when we compare the number of cooks and cooks' mates allotted in a flagship, for example, to the admiral's mess, ward-room mess, gun-room mess, and warrant officers' mess, it leaves us with the impression that this matter merits careful inquiry by some competent and impartial authority.

SOLDIERS' TEETH.

It has been decided that a soldier who as the result of (*a*) injury received whilst on duty otherwise than through his own fault or (*b*) wound or injury directly attributable to active service incurs loss of teeth may in future be provided with artificial teeth at the public expense.

# Correspondence.

"Audi alteram partem."

## THE CASE OF CROPPER *v.* STOKES.

*To the Editor of* THE LANCET.

SIR,—In reference to the recent action, in which I was defendant, will you allow me to take advantage of your space to thank the numerous kind friends who have interested themselves on my behalf, and especially those gentlemen who have been good enough to sign the memorial to Judge Edge. The case has been already briefly but fully detailed by Dr. B. G. Morison in THE LANCET of April 4th, p. 1031, so I need not enter further into it. All I have to state is that acting under the advice of the Medical Defence Union, in whose hands I fully believed my interests to be secure, I resisted an effort on the part of executors to avoid payment of certain reasonable fees for medical attendance. My action in this case has throughout been perfectly simple and straightforward; the position which I adopted at the outset I still maintain and have nothing to retract. With regard to the judgment itself, as such, I take no exception, although I cannot concur in it. The preponderance of evidence, as is almost unavoidable in many actions of this kind, was on the side of the plaintiffs, and it was perhaps to be expected, although a great surprise to me, that Judge Edge gave a verdict in their favour. I submit, however, that a mere deficiency of evidence is not sufficient basis on which to found the denunciations which were levelled against me. I maintain that his remarks, which have caused me great pain and annoyance, and very probably injury as well, were entirely undeserved by me and were not justified by the circumstances of the case.

I am, Sir, yours faithfully,

Highbury-place, N., April 13th, 1908. H. FRASER STOKES.

## DEATHS DURING ANÆSTHESIA.

AN ANÆSTHETIST'S POINT OF VIEW

*To the Editor of* THE LANCET.

SIR,—At somewhat irregular intervals the question of the mortality which occurs from or during the anæsthetic state becomes the subject of acute discussion in professional circles. On the last occasion (about 18 years ago) the point at issue was simple and scientific and strictly germane to the subject of anæsthetics; it was whether the immediate cause of death was cardiac or respiratory failure. At the present moment there seems to be a tendency to start another discussion upon "Deaths under Anæsthetics," but from the way the matter has been raised the side issues involved seem to have become of far greater importance than the original question itself.

*Statistics.*—Complaint is made that the figures furnished by the Registrar-General afford no criterion of the number of deaths which actually occur during the inhalation of an anæsthetic. But even if such be the case, it only tends to prove that those who furnish him with his facts hesitate to put down under this particular head cases in which there is a reasonable doubt as to the immediate or most important cause of death. It would surely be much more misleading to include under the heading "Anæsthetics for Operation" such cases as severe accident or advanced disease. In this, as in any other case, the figures of the Registrar-General can only be used for purposes of comparison with other causes of death or with deaths from the same cause in other years. It seems to me that it would be just as reasonable to complain that the figures given for the deaths from pneumonia or scarlet fever for any one year are inaccurate because the diagnosis might be open to question in some cases and, in any event, had not been verified by a coroner. Used in the way I have indicated—i.e., for purposes of comparison—the figures of the

Registrar-General are, I believe, very valuable. They show us, for instance, that as compared with such a common disease as pneumonia the deaths from anæsthetics are quite trivial in number (41,825 from pneumonia, as compared with 183 from anæsthetics in the year 1906). The figures would be even more reliable if the possibility of having public inquiry in each case could be done away with altogether and the ordinary certificate of death substituted. That the number of deaths from anæsthetics is increasing is perfectly true, but I think that everyone who has had any experience of the surgical activity of late years will support my view that the increase is not even now out of proportion to the enormous number of people who are daily put under anæsthetics for some reason or another. The real difficulty in making a comparison arises from the practical impossibility of ascertaining with scientific accuracy the exact number of operations performed in the course of a year, and no attempt seems to have been made to do so. A very rough approximation might perhaps be arrived at in the following manner. At the hospital to which I am attached there are 221 beds; we manage to keep records of about 70 per cent. of the cases anæsthetised (the balance consists for the most part of dental cases and out-patients that are not admitted to the wards). An average of five years of these records shows that this 70 per cent. represents 770 administrations per annum. It may fairly be said, therefore, that the number of administrations in this hospital of 221 beds is not less than 1000 per annum. Again, I am informed that at the London Hospital last year, with 927 beds, upwards of 17,000 administrations were recorded. It is clear, therefore, that the surgical activity of these two institutions, with under 1200 beds, is not less than 18,000 yearly. If the Medical Directory be consulted it will be found that, excluding the Poor-law infirmaries, the ophthalmic and dental hospitals, and many purely medical charities, at least 36,000 hospital beds are in use in England and Wales alone. Worked out on the above lines I think it may fairly be concluded that there cannot be less than half a million administrations every year. My own impression is that if a proper allowance be made for the above exceptions and for the private administrations undertaken throughout the country one million would not be an excessive figure. This is, of course, only a very rough approximation, but I have ventured to make it, imperfect as it is, because I am convinced that many who talk so glibly about the number of deaths from anæsthetics have not, even in their own minds, attempted to form any conception of the ratio of those deaths to the number of operations actually performed.

*Classification.*—The next difficulty which arises in connexion with this inquiry is that of assigning to the anæsthetic its exact share in any fatality that may occur upon the operating table. Neither the post-mortem room nor the pathological laboratory affords us any information of a positive character upon this point. In other words, it is impossible to say, by examination of a body after death, whether a patient did or did not die from an overdose of an anæsthetic. The only evidence that we have to rely upon is clinical evidence obtained under conditions of stress and strain which are not conducive to accurate observation or correct interpretation. As examples of the difficulty to which I am now referring I may perhaps instance the following typical cases. A man meets with an accident necessitating an immediate operation, during the course of which he succumbs. In such a case an inquest must, and should, be held, but in my opinion the inquiry should be confined to the "accident" alone and should not be allowed to wander off into side issues as to whether or no the anæsthetic was properly administered. If the latter course be pursued there can be no logical limit to the inquisition; the judgment, skill, and qualifications of the operator must be investigated, as well as the conduct and resources of the institution. From every point of view such a proceeding seems to me intolerable. Again, it is very well known that certain pre-existing conditions render the performance of an operation and the administration of an anæsthetic more dangerous than usual; for instance, Graves's disease, acute septic conditions (especially about the neck), advanced diabetes, status lymphaticus, &c. Of these the pathological condition known as "status lymphaticus" has of late been very prominently brought before the medical world, some people going so far as to assert that its presence, or suspected presence, in any given case should absolutely contra-indicate the administration of any anæsthetic whatever. There can be no question as to the pathology, but the clinical significance of the morbid condition is rather more doubtful, and it is certainly premature to point to any one symptom or sign, such as the swelling of the papillæ at the base of the tongue, as a contra-indication to the administration of chloroform. In this connexion it is not a little curious to note that in the first descriptions of the disease the condition was put forward as an explanation of many cases of sudden death, irrespectively of anæsthetics or operations. In any event it is obviously absurd to assume that the anæsthetic is alone to blame for the deaths which occur in patients who are operated upon in these states, nor should the administrator alone be called upon to bear the brunt of the inquisitorial investigations. In my experience the above cases form the basis of the majority of the sensational reports which appear in the lay press under the heading "Death from Anæsthetics"; not only so, but I am inclined to think that they constitute a considerable number of the deaths included by the Registrar-General under the heading "Anæsthetics for Operation."

There is still a third class of case to which a certain, though I believe a small, number of deaths must be ascribed. I allude to them with some trepidation, but at the present juncture it would not be right to ignore them altogether; I mean the cases in which the death is due to some error of judgment on the part of the operator, or to some unforeseen accident occurring during the course of the operation. Why is the administrator to be made the "whipping boy" in such cases? and how is it possible to avoid doing so unless in every instance the highly objectionable plan be adopted of insisting upon a public investigation in each case that dies during or within a few hours of an operation?

If due allowance be made for the above "borderland" cases, and if the enormous number of administrations be taken into account, I believe that every unprejudiced person must come to the conclusion that the evidence in favour of creating a public scare on this point is insufficient. I am myself much more inclined to the opinion that the public is, on the whole, to be congratulated upon the skill and care displayed in its service, and that the profession has every reason to be proud of the results obtained under difficult and dangerous conditions. I deprecate most emphatically all endeavours to prejudge the point at issue by sensational appeals to the public and protest against its being put forward that "some anæsthetists" object to any inquiry being made into their methods and results. It is one of the most cherished traditions of the medical profession that it has never required such unseemly stimulation and there is no reason to believe that the administrators of anæsthetics have ever shown themselves behindhand in maintaining this tradition.

*Remedies.*—Those who are responsible for raising the present discussion have suggested various remedies for what they term the excessive death-rate.

First we have a series of remarkable recommendations made by the coroner for the City of London. The chief proposal is that an inquest should be held in every case of death during anæsthesia (at present some coroners, very properly, I think, exercise a discretion in the matter). Bound up with this proposal are others which, if adopted, would not only place the administrator on his trial before the coroner in every case, but would make the latter the official censor, not only of all hospitals and public institutions, but also of the whole body of the medical profession. This may not have been the original intention of these secondary proposals, but I feel sure that it would be their effect in practice. If once this principle were accepted in regard to one particular department of practice the coroners themselves would find it difficult to resist suggestions to hold an inquiry into all deaths taking place in public institutions. Whether this will ever be considered advisable or not the proposal is, to say the least of it, somewhat premature. It seems also to be proposed to constitute the coroner's court into a sort of scientific "court of inquiry" into the whole question; such a proposal is, of course, simply ludicrous, as anyone who has had any experience of the procedure in a coroner's court must agree.

The next proposal is that it should be made a penal offence for an unregistered medical practitioner to administer an anæsthetic. Apart from difficulties connected with the education of medical students, this proposal must, I am afraid, be looked upon as one of those "counsels of perfection" which it is so easy to formulate and so difficult to put into practice. In the first place, it would involve the repeal and re-enactment of the Medical and

Dental Acts, for, as is well known, these Acts do not forbid anyone to practise; they merely afford a minimum of protection to the public, and indirectly to those who are duly qualified. I quite agree, of course, that it is very desirable that the Acts should be re-enacted in this sense so as really to protect the public and discourage quackery, but I can hardly believe that it will be possible to do this on the side issue of anæsthetics. Nor am I quite convinced that the advantage, as far as anæsthetics are concerned, would be worth the trouble involved. I am extremely doubtful whether many administrations are undertaken by unqualified people in the present day, the risks are too great, and it is even more doubtful whether many, if any, deaths can be attributed to this form of illicit practice. I have no doubt, too, that a good deal of opposition will be met with from the dental side unless the holders of the L.D.S. are specifically included in the term "registered practitioner." In these circumstances it does not seem to me to be very dignified or wise "to cry for the moon."

The proposals which have my most hearty sympathy are those which urge upon the medical examining and educational bodies the absolute necessity of affording the medical student additional facilities for obtaining experience and practice in this particular branch of practice. The proposals now made run very much upon the lines laid down by me in a paper published in THE LANCET of May 28th, 1892, p. 1178. Since that date the Society of Anæsthetists has been largely instrumental in obtaining considerable improvement, but no doubt there is still room for more to be done in this direction, and I gladly welcome the revival of the movement. As an addendum to the education of the medical student I would myself put forward the importance of educating the public. The lay mind is apt to run from one extreme to the other in anæsthetic as in other matters—from carelessness to abject fear—and I am not quite sure which is the worst condition.

Under the head of carelessness I would include insistence upon being given an anæsthetic for trivial examinations and operative procedures; the demand which patients sometimes make for chloroform for simple tooth extraction, and the occasional development of the "chloroform habit" in those who suffer from neuralgic pains. But the form of carelessness to which I would particularly draw attention is that in which a patient who is about to be operated upon ties the hand of the operator and embarasses the practitioner in attendance by insisting upon the latter giving the anæsthetic. I firmly maintain that this is wrong, and that only in exceptional circumstances should the anæsthetic be given by anyone who has a personal or professional interest in the operation to be performed, the danger being, of course, that his attention is apt to be distracted from the anæsthetic to the work of the surgeon. I do not in any way wish to imply that a specialist should always be called in, that is often quite impossible and unnecessary, but I do think that in such cases a neighbouring and disinterested practitioner should be asked to undertake the responsibility. As an example I may perhaps briefly relate a personal experience. A good many years ago I gave an anæsthetic for the examination of a lady by a particularly enthusiastic gynæcologist. A considerable degree of relaxation was necessary. On passing the speculum a very interesting and unusual pathological condition was discovered and nothing would content my enthusiastic friend but that I should come to the foot of the bed and look at the curiosity. On my return to my proper position I found the patient slightly livid and the respirations obviously failing. Slight pressure on the chin, &c., quickly restored matters, and at this distance of time I cannot remember exactly whether anyone but myself was aware of the jeopardy in which the patient's life had been placed, but I think not. This exemplifies what may, and I believe often does, occur, and I was that day taught a lesson which I hope I shall never forget. This too, I fancy, is one of the reasons why accidents are more common at the hands of the junior members of the profession, who are generally much more keen about the surgical procedures than about the somewhat monotonous process of administration. In hospital practice especially some of the most troublesome cases are those in which the patient comes to the operating theatre in a condition of mortal dread of the anæsthetic. It is in such cases that extremely sudden, and I believe quite unavoidable, death is apt to occur in the practice of any anæsthetist, however great his skill, however large his experience; it is the sword of Damocles that hangs over the head of each one of us. To a great extent this state of terror is engendered and enhanced by the sensational paragraphs and headlines of the lay press and by the injudicious utterances of people "clothed in a little brief authority," against which I would earnestly protest.

The City coroner suggests that a Royal Commission should be appointed to consider the question of deaths under anæsthetics. If the terms of reference to such a commission could be so arranged as to include an inquiry into the desirability of adopting the Scotch inquisitorial system, or, at any rate, of holding the coroners' courts *in camerâ*, I fancy that the medical profession would nearly unanimously accept the suggestion.

I am, Sir, yours faithfully,

J. FREDK. W. SILK, M.D. Lond.,
Anæsthetist and Teacher of Anæsthetics at King's College Hospital.

April 11th, 1908.

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*To the Editor of* THE LANCET.

SIR,—I have thought that the outcome of a fairly extensive experience, not only as an anæsthetist to general and special hospitals but also as a general practitioner, may be worth contributing to this discussion. I would say that I agree thoroughly with every proposition laid down by Dr. J. F. W. Silk and in the main with those of Mr. H. Bellamy Gardner, but I would limit their application to administrations conducted by those who can claim to be considered specialists. As regards the knowledge, either theoretical or practical, of the "average medical man"—recently qualified or otherwise—I have been driven to conclude that there is much room for improvement and that many belong not merely to "those who don't know" but to that much more dangerous class "those who don't know that they don't know." Mistakes are commonly committed and remarks are commonly made which show only too evidently an ignorance of the first principles of the subject. Cases have occurred, even fatal ones, in which an anæsthetist of any experience would have foreseen great difficulties, whereas he by whom the duty was undertaken obviously failed to do so and was unable to cope with them when they arose. Although it is true that faulty administration is comparatively very seldom the direct or sole cause of death, one hears much too often of instances where it has caused considerable anxiety and materially interfered with the success of the operation.

Until the examining bodies take this matter more seriously I am afraid one cannot hope for much alteration. In the stress of preparation for examination a student can hardly be expected to trouble much about a subject which, as he would say, "does not pay," for even when instruction is required there is little probability that a single question will be asked, and if it be that much importance will be attached to his answer. This has an unfortunate effect as regards the inability of many practitioners and men on the junior staff to give an anæsthetic for a simple operation without causing discomfort to the patient and trouble to the surgeon, even if worse results be avoided. But when improvement takes place the fact will still remain, as pointed out by "F.R.C.S." in THE LANCET of Feb. 8th last, that "for the proper conduction of a large proportion of operations done at the present time special skill and experience are as needful in the anæsthetist as in the surgeon, and the average practitioner cannot expect to be any more capable of replacing the one than the other."

Practitioners in this country are not usually expected to undertake a lithotrity or a gastro-jejunostomy, and it should be more generally realised by them, and by such surgeons as Dr. T. D. Luke describes, that for the average medical man the field of anæsthetisation has its limits no less than the field of surgery. It seems to me, therefore, that every student should be made to go through such instruction as would enable him to act in cases not requiring special skill and should be made aware of the circumstances under which special skill is needed and should be procured except in emergencies. I do not see how more can be accomplished during the ordinary five years' course, but his knowledge to this extent should be thoroughly tested.

As regards the present system of inquiry into deaths which have occurred during anæsthesia, it can hardly be doubted that it is unsatisfactory, and Dr. F. J. Waldo's paper only strengthens this impression. On reading the reports one cannot help being in many cases struck by the futility of the questions and by the danger of the little knowledge possessed by the coroner. For example, the administrator is often asked, "How much chloroform did you give?" and if this

happened to be a small quantity the coroner and jury seem satisfied, and *vice versâ*, not knowing that the amount used is of less importance than the method of using, and that a good administrator may successfully anæsthetise a patient in the same time that a bad one may cause a fatality, although the latter may have used only a fraction of the quantity employed by the former.

I am, Sir, yours faithfully,

April 11th, 1908. J. D. MORTIMER.

## HUMANE SLAUGHTERING OF ANIMALS.

*To the Editor of* THE LANCET.

SIR,—In the excellent article on this subject in your issue of March 28th I think the description of the Chatham abattoir is somewhat misleading. It is stated "at Chatham the animals are brought to a place just outside the walls of the great hall, here they are felled and then only is a sliding door opened and with the aid of ropes and pulleys the carcass is promptly drawn into the large hall." The method of slaughtering adopted at Chatham is, however, different from this description. The animals are brought into the waiting pens, then taken into the slaughter hall, where they are felled and bled, the carcasses are then dragged into the large meat-dressing room and afterwards conveyed on overhead runners to the cooling room. After each operation the slaughter hall is cleansed from blood and other animals brought in from the waiting pens. This arrangement entirely conforms to the recommendations of the Commissioners on Humane Slaughtering. The slaughter hall is divided into four slaughter pens by dwarf brick walls, thus preventing any animal from seeing another being killed, or from the sight or smell of blood. These walls only extend to half the width of the court, allowing ample space for circulation and the veterinary inspectors, whilst it also allows the superintendent's office to be placed in such a position that this official can have full command over the slaughter hall, practically without leaving his office.

I am, Sir, yours faithfully,

R. STEPHEN AYLING, F.R.I.B.A.

Dartmouth-street, Westminster, S.W., April 1st, 1908.

## OSCILLATORY CURRENT CAUTERY.

*To the Editor of* THE LANCET.

SIR,—In the *Daily Telegraph* of April 4th appears a communication from its Paris correspondent upon the experiments now being carried out on wireless telephony at the Eiffel Tower by Dr. Lee de Forest. The final paragraph of the communication is of very great interest to the medical profession generally, so it may be as well to quote the salient points:—

> Incidentally Mr. de Forest has made what may be considered a new discovery. The current from his apparatus had burnt his hands, and he at once concluded that this would be a very simple way of cauterising wounds with electricity and without pain. He made some demonstrations at the Saint Louis Hospital in the presence of Dr. Pozzi and other well-known surgeons, who, he says, were quite enthusiastic over his discovery.

Now, we, in England, are not in the least indebted to either France or America for this discovery, insomuch as it was anticipated in England as far back as December, 1906, when I was experimenting with continuous oscillations of electricity with a view to their therapeutic application. I very soon found that, whenever the retardation was more due to the inductance of the shunt circuit than the capacity thereof, any fingering of the solenoid, constituting the inductance, invariably resulted in the smell of burnt flesh and subsequent destruction of the epidermis of the fingers implicated, and this without any pain at the moment of contact. It occurred to me that, in this phenomenon, we have a means of rapidly and practically painlessly destroying malignant growths, and nævi, situated in spots which are inaccessible to other applications of electric or radio-active measures, such places, for instance, as the inner canthus of the eye.

In order to ascertain the length of time in which such a destruction of tissue would be repaired and in order to give some guide by which we might forecast a cure, on Dec. 28th, 1906, I submitted the first metacarpo-phalangeal knuckle of my right hand for a few seconds to the fat, hot spark from the inductance solenoid. At once and absolutely without pain a small hole was drilled clean through the skin. There was no eschar, as in an ordinary burn, but a simple circular tunnel as if of a drill through steel. I protected the spot by simply covering it from the air and daily watched the process of healing. At first nothing occurred but a very slight moisture or exudation of clear lymph. In about ten days the circumference was slightly raised and elastic and in a little more than a fortnight the exuded lymph formed a scab. At the end of rather more than five weeks the scab fell off and left a smooth skin beneath; and now, at the end of 15 months, it is very difficult to see where the lesion was produced. I did not immediately rush off to demonstrate this phenomenon, but with British phlegm have been busying myself in steadily perfecting the method, so that it may be used with the greatest effect and with the greatest safety to the patient. The apparatus is now complete.

I do not wish for a moment to detract from the merit of Dr. de Forest's discovery of this phenomenon, which is absolutely original and independent of mine, but I do wish to show that electro-therapeutics in England maintain their place in the front rank and that this so-called new discovery in Paris was anticipated in England at least 15 months previous to the present announcement.

I am, Sir, yours faithfully,

HORACE MANDERS, M.D. Brux.

Harley-street, W., April 6th, 1908.

## THE TREATMENT OF "MANIA" (?).

*To the Editor of* THE LANCET.

SIR,—Dr. Robert Jones's able and thoughtful letter in your last week's edition on this topic must, I feel sure, be welcomed by everyone interested in the treatment of mental disease. More especially must this be the case when it is recognised that after 30 years' experience as a medical attendant in huge asylums for the insane he is so definitely of opinion that "the proper treatment of insanity must be the study of each case upon its merits." This is the gospel I have preached during a period of 35 years' experience of insanity, and that experience makes me more and more impressed with the stern necessity for an intimate study of the temperament, character, and habits of each patient if a successful issue of one's treatment is to be hoped for. Pathological research may some day help us and guide us in our treatment I admit, but in my humble opinion never so much as careful individual clinical study.

Hard and fast rules as to rest, change, drugs, diet, &c., are impossible, and the idea that a physician can in half an hour's consultation map out a definite line of successful treatment in any case of mental disorder is to my mind quite fallacious. I am the greatest believer in "the influence of one mind upon another, whereby qualities such as insight, tact, common sense, inspired by a feeling of brotherhood and sympathy" are made so valuable, but such influence must be the outcome of knowledge of the character, the temperament, and the absolute workings of the mind of your patient. To obtain this knowledge individual attention is necessary, and how this can be gained in the huge asylums of to-day passes my comprehension. The study of the evolution of delusion in many recent cases of insanity is an individual one, and the value of such study cannot be over-estimated.

Dr. Henry Maudsley, in making his munificent offer to the London County Council, has emphasised all these facts, and it is to be sincerely hoped that when the House of Commons has sufficient time to discuss the serious question of the present legalised treatment of insanity it will do all in its power to give facilities for the early and individual treatment of mental disease.

I am, Sir, yours faithfully,

LIONEL A. WEATHERLY, M.D. Aberd.

Bournemouth, April 12th, 1908.

## OPEN WINDOWS AND ADENOIDS.

*To the Editor of* THE LANCET.

SIR,—In one of your annotations last week attention was drawn to Professor William Thomson's observations with regard to cold and damp air. His researches appear to me to corroborate my contention that the method of ventilating rooms by keeping the windows open on cold and damp nights is a serious error. For among other things he points out that dried and heated air has a much more powerful oxidising influence on the blood than cold and damp air. His observations should, I think, be considered by those who on *a priori* grounds believe that open windows in cold and damp weather can have nothing to do with adenoids, unless it be in the way of preventing them. If the various other arguments and figures which I brought forward should not be considered sufficient to establish the fact that children brought up on the open window principle suffer much more frequently

from adenoids than those who sleep with closed windows, it may at least be admitted that they, together with Professor Thomson's observations, show that serious and immediate attention should be given to the subject. The hope was expressed that Professor Thomson's paper would be "carefully considered and its lessons acted upon." To do this surely we should be justified in advocating that windows ought not to be kept open on cold and damp nights, in the sleeping rooms of children at least. I believe that from 80 to 90 per cent. of "adenoids" could be almost immediately prevented by the promulgation of this doctrine, for there is no doubt that mothers would willingly adopt it at once if they had the sanction and authority of the medical profession.

I am, Sir, yours faithfully,

Wimpole-street, W., April 13th, 1908. J. SIM WALLACE.

## SMALL-POX AND DISINFECTION ON BOARD SHIP.

*To the Editor of* THE LANCET.

SIR,—Your correspondent "J. F. B.," whose letter on the above subject appeared in your issue of March 21st, asks for reference to articles or records of experiments indicating the value of formalin as a disinfectant in such circumstances. Klein, Sommerville, and others have done experimental work on the germicidal efficiency of formalin. In the *British Medical Journal* of July 2nd, 1904, experiments are recorded by Sommerville in which formalin is put in competition with carbolic acid in the destruction of B. typhosus and the results show that the coefficient of formalin is 0·4, taking that of carbolic acid as 1·0. In the *Sanitary Record* of Nov. 29th, 1906, Sommerville and myself, working with a modification of the above method, in which various organic matters (serum, gelatin, mucin, &c.) are introduced, record a coefficient for formalin ranging from 0·2 to 0 3; and in the same journal of May 9th, 1907, working with larger quantities of organic matter, we find the same coefficient for this body—viz., 0·2 to 0·3.

It is clear that fumigation with any body of such low germicidal strength must be a most unsatisfactory method of disinfecting ships. The same remark applies to fumigation with $SO_2$. Nearly 30 years ago the whole question of the disinfectant value of this gas ($SO_2$) was investigated in Germany by Koch, Wolfhügel, Hüppe, and Proskauer, and the report of these experts stated that sulphur dioxide, with or without water, dry or damp, was entirely useless for the disinfection of spores and quite unreliable for the disinfection of sporeless organisms in the presence of any superficial protection. It was further demonstrated that in practice the unequal diffusion of the gas and its loss through various causes rendered the disinfectant value much less than in the laboratory experiments, and these scientists strongly recommended that disinfection by sulphur dioxide should be entirely abandoned. Dujardin-Beaumetz, Cassedebat, Sternberg, and others have described the use of this gas as wholly unreliable, a farce, and simply ridiculous. The vapours of formalin and sulphur dioxide, lacking, as they are, so largely in germicidal efficiency, are now superseded by the application of liquid disinfectants of high coefficiency. A mop or spray and warm watery dilution of one of these form the most effective implements for the disinfection of the various apartments, berths, &c., aboard ship.

I am, Sir, yours faithfully,

J. T. AINSLIE WALKER, F.C.S.

Kew Gardens, April 11th, 1908.

SUSSEX MILK-VENDORS FINED.—The sequel to samples of milk from Sussex being taken at Thornton Heath station, London, at the latter end of February, came before the Croydon magistrates on April 7th, when the Etchingham Milk and Cream Company, Limited, and John Everatt, of Cooksbridge, were fined, the former company £3 and costs and the latter defendant £2 and costs, for selling to retail dealers milk deficient of fat. In the case of the defendant company it was stated that the railway company (the South-Eastern and Chatham Railway) had complained of the condition of the churns; and in the other case the defendant said that he did not seal his churns because the railway company (the London, Brighton, and South Coast Railway in this case) reserved the right to inspect them. 8 per cent. of added water was found in the sample of milk from Cooksbridge and in the other case the milk was deficient of 40 per cent. of fat.

## SANITATION AND THE SLAUGHTER-HOUSE AT STUTTGART.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

WINE FOR THE POOR.—MEDICAL INSPECTION OF SCHOOL CHILDREN.—SUCCESSFUL MEASURES AGAINST VENEREAL DISEASE.—THE WÜRTEMBERG TROOPS THE LEAST CONTAMINATED.—SALE AND RE PURCHASE, AT GREAT LOSS, OF THE ABATTOIR.—INSPECTION AND CONTROL OF MEAT.—THE COST.

STUTTGART among its many attractions affords points of special interest to the student of sanitation. By reason of its importance and population it holds the twelfth place among the 36 largest towns of the German Empire. Since 1877 its medical officer of health has not been allowed private practice but must devote his whole time to the public service. In 1883 a second medical officer was appointed whose principal task is to attend to prostitutes and to prevent the spread of venereal disease. A third medical officer was nominated to superintend the insane and the poor-house. Finally, in 1903, a bacteriological institute was established. The chief medical officer of health has to watch over the work of the other officers. He has also to instruct and to advise the town councillors and the police in all matters relating to insanitary dwellings, drainage, factories, milk, food, and drug supplies, the care of the insane, &c. The city, which used to consist of only seven, has now 14 wards. There are several "doctors of the poor" who receive from the municipality £25 a year and have to give full medical attendance to the indigent living in their wards. They also have to advise in regard to the care of orphans and decide the amount and nature of the relief that should be given. Thus, in 1906 the food given to sick persons amounted to 13 500 portions and 4551 litres of wine. From this it will be seen how in Suabia wine is considered an important article of diet and a help in restoring the strength of the sick; indeed, this is another illustration of the fact that in wine-growing countries the fear of intemperance is not entertained.

In regard to the medical inspection of school children the question has not been neglected, but at the time of my visit the authorities were waiting to discover the right way of organising this service. There was a risk of a conflict of authorities. Dr. Krauss, the first medical officer of the city, was sent all over Germany to study what had been done elsewhere, but the results of his investigations were not at all satisfactory. In the meanwhile the chief medical officer of health receives twice a year in his own surgery all the school-children. The first examination is very thorough and conducted for the purpose of discovering any constitutional defect. If this is found, the medical officer decides whether the child should be sent to the salt baths, to a school colony in the country or on the hills, or what other mode of treatment is necessary. Whatever has to be done, it is done forthwith. The cost is at once defrayed by the city but the public authorities sometimes endeavour to recover the whole or part of the outlay from the parents. Also the cost is at times in part met by the insurance to which the parents contribute. In any case the treatment of the child is taken in hand at once and this is not delayed by questions as to who should pay the cost.

It is, however, in coping with venereal disease that the authorities at Stuttgart have been most successful. The system adopted differs considerably from that which prevails in most other towns. There are in Stuttgart, in spite of its population of 260,000 persons, only 16 women regularly inscribed as prostitutes. These women voluntary inscribe themselves so as not to be troubled by the police and present themselves for periodical examination. The real measure of protection adopted is that of establishing a very careful watch in the streets. Whenever there is reason to believe that a woman is practising prostitution she is arrested and examined. In 1906, the last year for which I was able to obtain figures, 1172 women were thus examined. Of these, two had soft ulcers; 118 had gonorrhœa, and of these 15 had syphilis as well; and there were 45 cases of syphilis. Thus there were 180 cases of venereal disease out of 1172 women examined. This represents a considerable decrease as compared to the figures given some years ago. The percentage of disease is now reckoned as 0·17 per cent. soft ulcers, 11·3 per cent. gonorrhœa, 5·1 per cent. syphilis; total, 16·6 per cent.

As a consequence of the decrease of disease among the loose women of the town the Würtemberg army is the purest of the German Empire. The number of Würtemberg soldiers contracting venereal disease during the course of a year only amounts to 6·4 per 1000. On the other hand, the Prussian, Saxon, and Würtemberg army included give an average of 19·4 cases per 1000. In the French army the proportion is 29·9 per 1000; in the Austrian army 57·5 per 1000; in the Italian 91·5 per 1000; and in the British army 122 per 1000. For ten years now the Würtemberg army has shown the lowest figures in regard to venereal disease. This is probably due to the method of constantly arresting not recognised prostitutes but any woman who is suspected and of examining not merely for syphilis but also for gonorrhœa. A small platinum spoon is introduced in the urethra to collect secretions for microscopic examination; also after the menses the cervical secretions are examined for gonococcus. The full details concerning every woman examined are carefully entered in a register, so that a complete sexual history is kept. Red strokes relate to syphilis and blue strokes to gonorrhœa. Such records spread over many years and by the coloured lines reference is quickly made. When a woman is found to be diseased she is forced to go to the hospital. Here there is a special ward and these patients are carefully separated from the other female patients. If the nature of the disease is not infectious the woman may be treated at home but the attendant medical adviser must certify to the police once a week that there is no danger. Finally, it should be mentioned that there is a female member of the police force present at the examinations of the women, and she endeavours to persuade them to lead a better life.

Of special interest to the British public is the history of the Stuttgart public slaughter-house. In England the whole question of meat-supply has to be dealt with and the experience at Stuttgart may be considered useful as showing "how not to do it." According to old church records a public slaughter-house was built at Stuttgart in the year 1509. A stone bearing an inscription still remains and it is dated 1585. The words carved in the stone are:—"Oh! flish das ider metzer Tesh nit alzeit Pflung hut das rech ich Got," which might be translated as: "Oh! flesh that in the butcher's pocket not always has *fins* that I leave to the revenge of God." In other words, Divine wrath is called down on the unscrupulous butchers who attempt to sell diseased meat. It would seem as if the slaughter-house remained public or municipal property up to July 18th, 1738, when it was sold to the Butchers' Union for the absurdly low price of 600 florins. In those days, and for many years, only sufficient cattle were killed for the needs of the town. But in the course of time and as the facilities of communication increased people came from the outskirts for their provisions. The accommodation then became insufficient. The slaughter-house was too small and a nuisance to the neighbouring dwellings. Therefore in 1866 the Butchers' Union built an abattoir near the King's wood garden which was intended only for the slaughtering of cattle. In time, however, the city authorities interfered and ordered the butchers to take the smaller animals, such as sheep, to the abattoir. As early as 1869 the accommodation of the new slaughter-house was already found to be totally insufficient. Not only were cattle from outlying districts brought in but they arrived from abroad, from Holstein and from Russia. New stabling had to be provided and the Butchers' Union built a stable for 200 cattle some distance away. In the course of time, and enlightened by the example of other German cities where the building of municipal abattoirs had proved so great a success both from the sanitary and from the financial point of view, the municipality and people of Stuttgart realised what a serious blunder was committed when the public slaughter-house was sold to the Butchers' Union. But now a vested interest had been created and it could not be abolished without making great sacrifices. The abattoir monopoly, which had been sold to the Butcher' Union in 1738 for 600 florins, was bought back by the city for the sum of 775,000 marks. It was in 1890 that the city determined to build a modern and model abattoir with a cattle market large enough to satisfy the requirements of a population of 380,000 inhabitants. The contract stipulated that the city might take possession of the abattoir belonging to the Butchers' Union in 1900 and use it until they had built their own which is to cost 5,000,000 marks (£204,000).

When the new abattoir is ready for use the fees charged for slaughtering will be increased, for the slaughter-house must be made to pay. Some years ago a municipal commission made special arrangements with the butchers to establish a price for the retail sale of meat. This meat tariff does not work well. The butchers consented to its establishment so as to get rid of the *octroi* or town dues that used to be levied on all animals brought in. The Stuttgart *octroi* was abolished in April, 1905, and the tariff for the sale of meat has four years more to run and will probably not be renewed. In 1849 and at other times the State and the local authorities have endeavoured to fix the retail price at which meat should be sold, but it does not seem to work satisfactorily. Laws of Jan. 12th and March 30th, 1905, appointed the commission to regulate the price of meat. A veterinary surgeon nominated by the city presides; then there are one member of the Butchers' Union, one representative of the cattle dealers, one representative of the dealers in smaller animals, and the business manager or economic superintendent, as he is called, of the slaughter-house. This commission met no less than 153 times in 1906. Not only is the price of meat fixed but great care is taken to see that it is only sold when sound and in a wholesome condition. Thus in 1906 there were at Stuttgart 247 retail butchers and they received 2878 surprise visits from inspectors. Then there are 885 retail stores, not regular butcher's shops, but places where some kinds of meat, and more especially sausages, are sold; the number of visits and examinations made amounted in all to 8885. At the 14 fish and poultry dealers 167 inspections were made. At the public market and during fairs 35 more inspections took place. Thus, taken altogether, commendable activity was displayed. Yet with all this only in 165 cases was it found necessary to prosecute and these proceedings were nearly all settled by the payment of fines.

Though the butchers will have to pay higher fees for slaughtering in the new abattoir, this will be compensated by the much greater profits which it is believed that they will derive from the bye-products. They have been authorised to form a trust for the conjoint working of the various industries connected with these bye-products and this is one of the most profitable phases of the whole business connected with slaughtering. The municipal statistics show what is the extent of the abattoir business and also they demonstrate the increase of poverty and depression in Germany. In 1905, 142,402 animals (weighing 12,252,398 kilogrammes) were slaughtered, but in 1906 there were only 138,281 animals (weighing 12,187,409 kilogrammes) slaughtered. This, in spite of a constantly increasing population, indicates a falling off in the consumption of meat which in 1906 amounted to 64,989 kilogrammes. If Cannstatt and the other suburbs are included, the grand total is 162,652 head in 1905 and 156 970 in 1906, or 5683 animals less. But what is more significant than the number of animals killed for food is the character of these animals. A far greater proportion of cows and heifers were brought in for slaughter. Then, as there is more poverty and therefore less demand for the expensive portions of meat, many of the best cuts are imported from the surrounding districts. Now of the animals killed in 1905, the number found to be diseased was 21,527; but in 1906, out of a smaller number killed, a greater number were diseased—namely, 22,865, showing an increase of 1338. In 1906, there were 7528 cases of tuberculosis, as against 6533 in 1905, an increase of 996. Of these animals, after destroying the diseased parts, there were left for consumption 21,697 kilogrammes in 1906 and 20,373 kilogrammes in 1905, an increase of 1324 kilogrammes. Of what was left to be sterilised and cooked by the *Freibank* there was no change worth mentioning—1036 animals in 1905 and 1065 animals in 1906, an increase of only 29 animals. The number of animals that are totally destroyed as absolutely and in every part unfit for food is, of course, less where the *Freibank* exists, though it is doubtful if the British poor would consent to purchase food known to have been diseased, however carefully it might be sterilised. With the increase of distress the number of horses, as well as of inferior cattle, consumed as food naturally augmented—namely, 277 in 1906, as against 255 in 1905; but counting the carcasses brought in from the outside there was an increase of 26 horses used as food in 1906.

Finally, the financial situation must be considered, and the growth of abattoir business may be illustrated by the fact that the fees paid for slaughtering amounted to 8335 florins in 1866, to 67,763 marks in 1876, to 80,491 marks in 1886, to 88,317 marks in 1896, and to 105,900 marks in 1906. If we take the budget for this last-mentioned year the

receipts apart from these fees for slaughtering were: for rent for standing room 8910 marks; weighing fees, 2323 marks; lairage, 24,413 marks; stables, 17,587 marks; and food served in the restaurant, &c., 26 519 marks; or a total of 186,660 marks, including the pfennigs, which are not given in the above figures. Then to this must be added, though not so directly connected with the abattoir business, the rents paid for various parts of the premises used for a saloon where meals and refreshments are served to all who have business or work at the abattoir, or for dwellings, drying lofts, places for examining meat, hide-sheds, altogether yielding 15,018 marks. The sale of dung for manure brought in 2195 marks and sundries 1640 marks. The interest on the reserve funds was 13,668 marks; sundry fees came to 806 marks; and odds and ends, 777 marks. Loans on bonds and shares refunded 5043 marks, so that the grand total receipts were 250,101 marks. Then there were money transactions not directly connected with the abattoir costing 16,169 marks and the payment of taxes 12,092 marks; salaries, cost of supervision, printed matter, stamps, &c., 57,693 marks. The cost of hay, straw, coals, light, water, repairs, cleaning, removal of confiscated carcasses, 64,368 marks; sundries, 5702 marks; various purchases, 484 marks; rent for adjacent ground, 3000 marks; purchase of bonds for reserve fund, 79,866 marks; cost of refunding, 4894 marks; making a total expenditure of 244,342 marks; cash in hand, 5758 marks; total balance, 250,101 marks. From all these figures it will be easy to see at what cost the public abattoir is managed and that it can be made a paying and going concern even in the unfavourable circumstances existing at Stuttgart. The building erected by the Butchers' Union is not, of course, in keeping with modern exigencies, but it is, nevertheless, very preferable to the private slaughter-houses which it supplanted. Now also that it is under municipal management the best use is made of it and every possible precaution is taken. Of course, the animals are carefully inspected by fully qualified veterinary surgeons both before and after slaughter. For this there is one chief veterinary surgeon and six fully qualified assistants with special knowledge of bacteriology. Only veterinary surgeons work in Stuttgart, though in the outlying suburbs ordinary meat inspectors were employed. Formerly a certain amount of meat was smuggled in from the outside and was not taken to the abattoir for inspection. One of the arguments in favour of an *octroi* was that it would stop this practice. When in 1877 the *octroi* was established a special store had to be built where all the meat from the outside was deposited for examination and the levying of the town dues. To-day there is not only very strict examination at the abattoir but inspectors must go to all the retail shops at least once a week and see that everything is thoroughly clean. Thus the example given at Stuttgart is certainly encouraging and worth taking into consideration.

## LEEDS.

(FROM OUR OWN CORRESPONDENT.)

*Annual Meeting at the General Infirmary.*

THE 140th annual meeting of the supporters of the infirmary, which is the largest general hospital in Yorkshire, was held on March 25th, under the chairmanship of the treasurer, Mr. Charles Lupton. From the report of the work accomplished during the 12 months ending Dec. 31st, 1907, it appears that 7086 patients were treated in the wards, that number including 341 patients who remained in at the end of 1906. This number was just 34 ahead of the previous year, and probably represents the maximum number of cases that can be adequately dealt with under the present conditions as to accommodation. Of the new patients admitted 1348 were medical, 4420 were surgical, and 977 were ophthalmic and aural. The daily average number of beds occupied was 368, the average number of patients passed through each occupied bed was 19·26, and the average duration of treatment of each was 19 days. It will be noticed that the last figure is low and this is due to the fact that, especially from the surgical wards, large numbers of patients who have been operated on and who require skilled nursing are transferred to the two semi-convalescent hospitals at Cookridge at an earlier date than they could be taken to their own homes or removed to convalescent hospitals which are not provided with accommodation for patients who require so much supervision. The rate of mortality was 6 66 per cent., but deducting the 140 patients who died within 48 hours of admission the percentage works out at 4·68. There were 729 cases of accident admitted; of these 68 were burns and scalds, 53 being in children and 15 in adults, and the mortality in these distressing cases was 63·23 per cent. The new out-patients amounted to 40,418. The out-patient maternity department, which provides abundant facilities for the work of the students, has been carried on in the same way as in former years, and during the year there were 502 confinements. For a good many years an inquiry officer has been employed by the infirmary who devotes all his time to making investigations as to the financial position of applicants for relief and treatment at the institution. In the waiting hall in the case of 14,447 patients inquiries were made; of these 124 admitted their ability to pay and were not attended to. A percentage of those apparently suitable for infirmary treatment was made the subject of further inquiry at the addresses given. Of 967 thus investigated 876 were deemed suitable cases and 91 were unsuitable as they were found quite able to pay for the treatment required. It is a fact which is sometimes overlooked even by those who might be supposed to know better that the number of women and children treated in the infirmary is greater than at any other special or general infirmary in Yorkshire. In the out-patient department there were 11,332 children under 13 years of age and in the in-patient department 1412 under the same age, while the total number of women treated (exclusive of those in the maternity department) was 14,858. Turning to the finances the total receipts for the year 1907 were £29,361, as against £30,814 for the previous year. Benefactions showed a diminution of £2016. The total expenditure on the three institutions—that is to say, on the General Infirmary and on the Ida and Robert Arthington Hospitals—amounted to £36 215, so the expenditure has exceeded the income by £6854. To this must be added the amount of an adverse balance at the beginning of the year, so that the debit balance now amounts to the large sum of £14,946. This disproportion between income and expenditure has been partly met by the allocation of £11,843 from the investments held by the trustees of the Leeds House of Recovery to the use of the Leeds Infirmary. The money is retained by the Charity Commissioners and the income only paid to the infirmary, but it will meet the loss of income occasioned by the loss on the year's working. The chairman made an urgent appeal for more support, pointing out that the expenses must of necessity increase. The addition of ten nurses to the staff has involved an additional annual expenditure of £600, and the sum of £688 has been expended in the alteration of houses in the possession of the infirmary to provide accommodation for these extra members of the staff. It is certain that in the immediate future additional accommodation will be required in the way of operating theatres, but this cannot be undertaken until funds are forthcoming.

April 13th.

## WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

*Medical Inspection of School Children in Cardiganshire.*

ONE of your local correspondents referred last week to this subject briefly. The position is as follows. At the last census the population of Cardiganshire was 60,237 and since the previous census there had been a decrease of about 2500 persons. The area of the county is 440,630 acres, or about that of Worcestershire where the population is approaching 500,000. There are thus difficulties attending the medical examination of school children in Cardiganshire which are not so pronounced in more densely populated English counties, and in order to find some way of overcoming them a conference of representatives of the county education committee, the sanitary authorities, and medical officers of health was recently held in Lampeter. Two proposals were considered. One that a medical officer should be appointed for the whole county and that his duties should be confined to the medical inspection of the school children, and another that the inspection should be carried out by the medical officers of health in their respective districts. It appeared to be considered by a majority of those present that the difficulty of getting from one part of the county to another was an insuperable objection to the appointment of only one official and ultimately

it was decided to recommend the education committee to arrange for the inspections to be carried out by the medical officers of health. It does not seem to have been considered necessary to provide for any general supervision or control of the inspections. This is to be regretted and it will be a great mistake if any attempt is made to collate the reports of the inspecting medical officers in the offices of the committee by an official who is not a medical man and who would not therefore be able to appreciate the importance of the results that it is anticipated will be obtained by the systematic inspections which it is proposed to make.

*Special Accommodation for Convalescent Lunatics.*

The chairman of the committee of visitors of the Three Counties Asylum for Carmarthenshire, Cardiganshire, and Pembrokeshire recently proposed to the committee that arrangements should be made for the treatment in a separate building of those patients who it might be expected would within a reasonable period be restored to health. He expressed the opinion that it was especially depressing for this class of patient to be constantly associated with those whose condition was hopelessly incurable. In order to give practical effect to his proposal he suggested that a new house should be built for the medical superintendent whose present residence might then be utilised for the convalescent lunatics.

*Flogging Sentences at Glamorgan Assizes.*

The large number of robberies with more or less violence which have occurred in the streets of Cardiff has been a matter of concern for some time not only to those whose business it is to keep down crime but also to those residents who have been obliged to traverse certain parts of the borough in the neighbourhood of the docks and in the centre of the town. During the past year there have been no fewer than 27 persons committed for trial for the offence referred to. It is satisfactory, therefore, to find that at the assizes held at Cardiff Mr. Justice A. T. Lawrence has shown his determination adequately to punish those who are convicted before him of such a crime by sentencing them not only to terms of imprisonment but to receive in addition a flogging with the cat. In sentencing one prisoner who had been found guilty of brutally assaulting and robbing a haulier his lordship said: "It is a very serious offence and one I should not be doing my duty if I did not attempt to repress as far as lies in my power. I know there are some humanitarian people who object to the use of the lash, but when we have to do with persons of your class I do not think there is any other way of teaching you and of convincing you that it is a game that is not worth the candle. You must know that if you come to this court for committing a robbery with violence you will assuredly suffer not only imprisonment, about which you do not appear to care very much, but also by your person receiving chastisement."

April 13th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

*A Suggested Colony for Sane Epileptics in Scotland.*

AT a recent meeting of the adjustment committee of the parish councils of Edinburgh, Glasgow, and Govan, a remit was submitted from Edinburgh parish council in favour of the establishment by joint action of the three parishes and of other large parishes in Scotland of a colony for the treatment of sane epileptics. From the returns it is seen that at Jan. 1st, 1900, there were in Scotland 443 chargeable sane epileptics, and returns from the three parishes for 1905 showed that the number chargeable in Edinburgh was 29, in Glasgow 74, and in Govan 46, making a total of 149. Out of this total 15 from Edinburgh, 34 from Glasgow, and 20 from Govan were recommended as suitable for the proposed colony. It was decided by the committee that the figures relating to the three parishes did not justify any urgent necessity for the establishment of a joint colony, and also that in view of the Royal Commission on the Poor-law and the Feeble-minded further consideration should be deferred.

*The Water-supply of Aberdeen: Important Report.*

There have just been issued to the members of the Aberdeen town council copies of the report prepared by Professor D. J. Hamilton and Professor Matthew Hay embodying the results of their examinations of the water-supply of the city. The report shows that chemical and bacteriological examination of the water-supply was carried out weekly for a period of 14 months, commencing with November, 1906. The water, as was already well known, was found to contain a remarkably small proportion of saline matter and is in that respect much above the usual standard of water-supplies. During the first three months of 1907 there was a somewhat curious increase of chlorides to nearly double their usual amount. This was apparently not due to sewage pollution, however, for a sample of water from the Dee above Braemar gave also an increase of chlorides. The amount of "free ammonia" and of "albuminoid ammonia" was usually within the limits for a potable river water, but on some occasions the limit for albuminoid ammonia was exceeded. As regards the bacteriological examination the results were more decisive, especially in reference to the bacillus coli. The number of germs or germ colonies growing at 20° C. varied from 90 to 2770 in one cubic centimetre of the water, but both these figures were exceptional, the usual range being from about 200 to 700. The maximum limit for a good river water is usually stated at 500. The number of germs growing at the temperature of the human body varied from 2 to 58, but was seldom above 20. The maximum limit for a good river water is put at 50. The bacillus coli was on many occasions detected in as little as one cubic centimetre of the water, whereas a really first-class water should not give evidence of the bacillus coli in the centrifugal residue of 100 cubic centimetres of water. Much of this pollution is probably due to surface drainage from grazing lands occupied by cattle or sheep and to cultivated land that has been recently manured, but part is almost certainly due to domestic sewage. Professor Hamilton and Professor Hay conclude their report as follows. "In view, therefore, of the results of our examination of the water-supply and of our knowledge of the impracticability of adequately protecting the river against domestic pollution, we have no hesitation in expressing the opinion that the water-supply of the city in its present condition is dangerous, and that steps should be taken either to filter the water or to obtain a supply from a source not open to domestic pollution. Filtration of the present supply is, in any case, advisable in order to remove the turbidity which is so frequently observed after wet weather."

April 13th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*Royal College of Surgeons in Ireland: Election of Examiners.*

A MEETING will be held on Tuesday, May 5th, at 4.30 P.M., to elect examiners. Graduates of any University which may be from time to time recognised by the College will be eligible for election as examiners in the subjects of general education. All the other examiners will be Fellows or Licentiates of the College or professors or lecturers in any school of medicine recognised by the College. Candidates are requested to lodge their applications in writing with the registrar, at the College, on or before Tuesday, April 28th, at 10 A.M.

*Dublin Abattoir and Slaughter-houses.*

The claims of the Dublin abattoir on popular favour are about to be tested sharply. The expenditure on that institution is said to increase, while the income is surely decreasing, and so "the concern is farther off than ever from paying its expenses." So says the report of the estates and finance committee of the corporation of Dublin for the year ending March 31st, 1908. Three causes have been assigned by the superintendent, each of which is of high interest to the public from both the sanitary and the financial point of view. 1. The tolls from the army authorities have dropped from 50*s.* weekly to 10*s.* The contractor was bound to kill there all the animals of which the meat was supplied to the army; the change made in the contracts results in the supply of tinned meat in the proportion indicated by the above-mentioned decrease of tolls. 2. The second, "perhaps the most important, cause, and one which is remediable, it appears, is the system adopted by a large number of owners of private slaughter-houses of subletting their premises either at a weekly rent or at so much per head of cattle slaughtered. This system, which is largely on the increase, has a very serious effect on the earnings of the abattoir." A

judicial decision in the English King's Bench was said by the law agent to make that subletting illegal. The point has, however, been contested; and no action has been taken by the public health committee so that the report before me thinks that "they may find themselves later on held accountable for their inaction." 3. A better defined grievance is included in the fact that "although several Royal Commissions have urged the advisability of having all animals (cattle, sheep, and pigs) slaughtered in public abattoirs, the Department of Agriculture and Technical Instruction, in spite of the corporation's protest, continue to cause pigs dealt with under the swine fever order to be slaughtered in a private slaughter-house situate in a district where the population is very congested." The authors of the report consider that if this procedure is persisted in "the matter should be brought under the notice of Parliament by one of the Members for the city." There is no doubt that, in any event, the inevitable prominence which will be given to the question of slaughter-houses, and their claims and uses, will tend to keep all such establishments all the more free from disorder—tangible, visible, or odorous.

*Royal Victoria Eye and Ear Hospital, Dublin.*

At the annual meeting of the friends and supporters of the Royal Victoria Eye and Ear Hospital held recently the report of the council for 1907 showed that 1369 patients from all parts of Ireland were admitted to beds in the hospital during the past year. The average period of treatment of these was about three weeks. An average number of 76 beds had been occupied throughout the year. The total aggregate of hospital residence exceeded by 2000 days that of the record of 1906 and would have been greater but for the successive closing of wards while in the hands of painters. In the out-patient department 7267 new patients were registered, while 2816 patients returned who had been formerly treated, making a total extern attendance of 10,083 for the year. The aggregate number of visits of these patients was 41,167, which shows an average of 135·4 extern patients attended to by the surgical staff daily. Many of these were children, including infants of two and three months; and a great number of parents had written to express their gratitude for the attention and benefits received, with appreciation of the arrangements for comforts and general convenience. The previous annual report had mentioned the consideration of plans for the erection of a special detached building for accommodation of the treatment of extern patients. The plans are now prepared and tenders for the erection obtained. An increase of funds will be necessary to defray the cost of the building. Depreciation of securities since the former report has lowered the value of the investments which had been made for building purposes. This amounted on Dec. 31st, 1907, to £3852 only, or about one-third of the amount required for the erection and the equipment of the building. The council accordingly earnestly asks for special donations to the building fund for this erection. The income of the institution during the past year displayed an encouraging increase on that of 1906, amounting to £716, of which £473 came in the form of bequests and £212 as voluntary contributions. This item of the financial report is considered by the council to be highly satisfactory; but against it was the cost of painting (between £900 and £1000) which had to be provided. A portion of this considerable sum is chargeable to revenue and another part to capital; a portion has already been paid, but as the work was finished but a few weeks ago a considerable proportion of the expense necessarily passes into the accounts of this year. The necessity for meeting the additional strain of this item resulted in an excess of expenditure over income for the year which has just been concluded amounting to £80. The income from bequests would have been much greater but for the depreciation of the value of securities which had taken place and which caused a complete loss to the hospital of one bequest of £2000 which would have otherwise passed into its funds.

*Medical Contracts for Unions and Dispensaries.*

Politics always get into Irish affairs. The following communication has been sent by the Local Government Board of Ireland to certain boards of guardians which had expressed their desire of limiting their attention to the tenders for drugs and other medical and surgical necessaries to those offered by Irish firms:—

SIR,—The attention of the Local Government Board has been drawn to the advertisement issued by the Board of Guardians of —— Union, inviting tenders for the supply of medicines and medical and surgical appliances to the workhouse and dispensary districts of the union for the year commencing on the 1st prox., in which it is stated that tenders will be only considered from Irish firms. In reference thereto the Local Government Board have to point out that one-half of the expenditure is recouped to the union out of the Local Taxation (Ireland) Account in respect of drugs or appliances procured under prescribed conditions; and they desire to explain that unless the competition for the contracts be thrown open, so as to enable the guardians to obtain the best drugs and appliances in the market on the most advantageous terms, the Board would feel precluded from recouping from public funds any portion of the expenditure incurred in such restricted contracts.

It is impossible not to sympathise with the patriotism of the guardians and with the economy of the Government department.

*Country Life for Pauper Children.*

Mrs. J. Wyse Power, one of the most practical as well as devoted of Irish philanthropists, and the wife of a leading journalist, has for some years been a member of the board of guardians of the North Dublin Union. This lady has been largely instrumental in inducing her board to try the experiment of boarding out the workhouse children. Taking their stand on the fact that from every point of view, moral, physical, and mental, it is better for a child who must be put on the rates to be reared in a healthy, decent country home than in a workhouse however well conducted, Mrs. Power and her colleagues arranged in the first place to send early in 1905 27 children to Piercestown, where arrangements had been made by the parish priest to receive them. Tinahely parish received 16 on May 26th, 1906; Killinick, 17 on July 29th, 1907; and Lucan two instalments on Nov. 22nd, 1906, and April 26th, 1907, making a total of 37. And on March 10th of this year 21 were sent to Gorey. So there are now 118 children boarding out beyond the confines of the union and 127 others in North County Dublin. Mrs. Power has now discussed the results in the *Freeman's Journal* and there is surely reason to feel proud of the record. Not one of the children has died; they are all practically members of the families in which they have been placed; "and they have," she says, "the same prospects of growing up to be industrious, self-respecting, and useful members of the community, as have the children of their foster parents." She contrasts this state of things with the training afforded by the union life and its schools in the following words: "Life in the institution over, they are sent out to face the world without any experience where they must do everything for themselves and where incapacity to fight their own battle against all odds inevitably means failure and its consequences. No wonder that the results are what we know them to be and that the prison cell and the able-bodied workhouse ward—especially in the female divisions—are occupied by so many pauper-reared children grown to maturity." The economics of the experiment seem to be correspondingly encouraging. Mrs. Power tells us that although figures are not available the cost of the maintenance of the boarded-out child is actually less than if he or she had been kept within the precincts of the workhouse.

*Housing of the Dublin Poor.*

In an article recently published in the Dublin evening papers by Mr. T. J. Stafford, F.R.C.S.I., and Mr. La Touche, full prominence was given to the gruesome conditions of the homes of the working-classes. Not more than 12 per cent. were found to have "housing accommodation which could be regarded as satisfactory in respect of air space, sanitation, or cleanliness, and almost 60 per cent. of them lived in one room each." And the average number of the individual families caged in such rooms was five. At the corporation meeting of April 14th Mr. Lorcan Sherlock successfully moved:—

That a special committee be now formed to inquire into, and report to council upon, the housing conditions of the workers of Dublin; that the committee report as to what action, if any, should be taken to give effect to the recommendations of the Mansion House Conference Report; that the committee be empowered to obtain legal opinion as to the powers at present possessed by the corporation and obtain information as to powers possessed by local authorities in Belfast and the large cities of England and Scotland; that the committee be requested to make suggestions which will tend to end the discreditable and dangerous condition of housing at present existing in Dublin under which over 20,000 families live in one room each.

The subject has also been brought before the corporation by Dr. J. C. McWalter and there is anticipation that measures will be taken.

*Anthrax in Belfast.*

A man suffering from anthrax was admitted into the Royal Victoria Hospital on April 10th. The black, dry, depressed eschar on the forehead, surrounded by a slightly elevated

border of small vesicles, was excised, serum was administered twice, and the patient is doing well. It is believed that the disease was contracted when the man was working at a city hide store, in which some hides were being prepared for shipment. None of the workers in the same place up to the present are affected.

*Hospital Abuse in Belfast.*

For some time past there has been considerable dissatisfaction expressed by both general practitioners and hospital staffs in Belfast that people who are quite able to pay medical men receive gratuitous advice at the Belfast hospitals, more especially in the extern departments. Certain circumstances have accentuated this feeling. In the first place, there is undoubtedly a tendency always in a place like Belfast—where there is a medical school—to a plethora of medical men, and for the same reason a large number of medical men will be found specialising in every department. Further, the present business depression, due to the staple industry of Belfast—linen—being in a very unsatisfactory condition owing to the American money panic, has not improved matters for the medical profession. During the year 1907 there were 29,433 extern patients in the Royal Victoria Hospital. Some days the numbers exceeded 400, and the extern surgeons and physicians, struck with the fact that well-to-do people were sometimes attending, brought the matter before the medical staff and board of management with the result that a joint sub-committee of some of the staff and some of the board of management was formed to consider the matter, and after some very harmonious meetings decided [1] that the arrangement in regard to 1*d.* a week subscribers of *bonâ fide* working classes should remain as before. For at the various works in Belfast by paying 1*d.* weekly to the funds of the Royal Victoria Hospital the workers can themselves and their families be treated in the extern department or admitted to the wards, except when suffering from tuberculosis or any infectious disorder. A plan was adopted at the hospital many years ago under which obviously necessitous cases are treated on their merits and subscribers' "lines" should be given only to such necessitous people. Other patients should present a written communication from their own medical men. It was also arranged that when a case came to the extern department (not necessitous, or 1*d.* a week subscriber, or with an annual subscriber's recommendation) he or she should be examined and his or her medical attendant should be asked if the patient ought to be treated by the charity. Finally, it was agreed that the following notice should be hung up in the extern department of the Royal Victoria Hospital:—

NOTICE.

This is a charitable hospital and medical and surgical treatment is only intended for those who are unable to pay for it elsewhere. The visiting medical and surgical staff give their services free. It is desirable that patients should come to the hospital provided with either a subscriber's ticket or a note from their usual medical attendant.

A discussion was held on Hospital Abuse on Feb. 20th,[2] at which it was reported what steps had been taken by the staff of the Royal Victoria Hospital, and it was decided to send a circular to the practitioners in Ulster asking them to second the efforts now being made by the staffs of the various charitable hospitals to reduce hospital abuse by taking steps to prevent well-to-do patients from coming to these institutions. A small subcommittee of general practitioners appointed at this combined meeting of members of the Ulster Medical Society and of the Ulster branch of the British Medical Association to arrange details has advised: "1. That a circular be sent to the medical men in Ulster asking them to second the efforts now being made by the medical staffs of the various charitable hospitals to diminish hospital abuse by not sending their well-to-do patients to these institutions. 2. That the medical staffs of the clinical hospitals be asked to lay before their students, as opportunity arises, the evils of hospital abuse. 3. That with regard to those who are unable to pay the full consultation fee, some arrangement between the family doctor and consultant as to modification of same should be possible. 4. That we deplore the necessity which exists of requiring '1*d.* a week' subscribers who imagine that they are paying an equivalent to treatment received. 5. That a small committee be formed to wait on the boards of management of various hospitals to explain the difficulties under which the general practitioner labours owing to hospital abuse." This report will be considered at an early meeting of the medical profession in Belfast. Under the 1*d.* a week subscription the working classes subscribed to the Royal Victoria Hospital last year a sum of £3894, and it is calculated that for this they were accommodated to the extent of about two wards, or 64 beds, but it must be recollected that quite independently of such a subscription many of those admitted by this arrangement could, as in the case of sudden and severe accidents, *ipso facto* have entered the hospital. Apart from hospital abuse there can be no doubt that the Truck Act injured general practitioners very much in Belfast, as many medical men were formerly appointed to look after various works, an arrangement which ceased when that Act was passed. Although there are not so many clubs in Belfast as in similar large centres in England there is as much sweating and while in England a medical man with a club generally attends the women and children of the members, for which he gets additional pay, in Belfast he is not at all so sure of being called in by them.

*Ulster Medical Society.*

A meeting of this society was held in the Medical Institute, Belfast, on April 2nd. The first business was to receive the report of the committee on hospital abuse, when it was decided to send the recommendations to each member of the society and to call a conjoint meeting of the society and of the Ulster branch of the British Medical Association to consider them in May. Dr. A. Dempsey read notes of a successful case of Cæsarean Section. Dr. J. H. McKee of Harrogate read a short paper on Harrogate and its Treatment. Dr. Cecil E. Shaw brought forward a communication, "Squint in Childhood," a paper based on over 200 cases.

April 14th.

[1] See THE LANCET, Jan. 18th, 1908, p. 199.
[2] See THE LANCET, Feb. 29th, 1908, p. 680.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*Municipal Grants in Aid.*

THE Municipal Council of Paris during its recent sittings has voted various grants in aid, amongst which are the following. A sum of 3000 francs to children's dispensaries for the distribution of sterilised milk. The sum of 94,000 francs in aid of children's dispensaries in general. The sum of 169,800 francs for laboratories of bacteriology and radiography, for libraries, and for travelling scholarships. A sum of 3000 francs for bringing the laboratory of neurology under the care of Professor Albarran up to date for the congress of 1908. The sum of 1000 francs towards the International Polyclinic of M. Aubeau. A sum of 141,000 francs for the foundation of an oto-rhino-laryngological department at the Laennec Hospital. Lastly, a sum of 365,000 francs for carrying out the isolation of tuberculous patients in the hospitals.

*A Medical Trial.*

An interesting judgment was given by the Tribunal of the Seine on March 31st. Madame X sued Professor Berger for 110,000 francs damages in regard to an operation which that surgeon had not seen fit to conclude. The operation in question was undertaken to restore the nose of the daughter of Madame X. After Professor Berger had prepared the graft, which he had taken from a costal cartilage, he saw that it would be dangerous to do any more. Madame X, without listening to the excellent reasons which Professor Berger laid before her in defence of his conduct, sued him for 100,000 francs on behalf of her daughter whom she said had been irreparably damaged by his refusal to continue the operation, and also for 10,000 francs for herself. The Tribunal appointed three experts to consider the conduct of Professor Berger; they reported that they considered that he had acted perfectly correctly and Madame X was accordingly non-suited.

April 13th.

## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

*A Comparison of the Diagnostic Value of Pirquet's and Calmette's Reactions.*

IN Professor Monti's out-patient department, where about 30 children are seen daily for the first time and about double that number of old patients, Dr. Kremer has made a series of comparative observations in order to ascertain whether

Calmette's and Pirquet's reactions were of equivalent value or not. He divided the individuals into three distinct groups—namely, cases of tuberculosis with positive clinical symptoms, cases of suspected tuberculosis, and non-tuberculous cases. In each group the observations were made at the same time. The first group consisted of 33 cases, of whom 17 were treated by Pirquet's method of cutaneous inoculation with tuberculin and 16 were treated by Calmette's method of instillation of a drop of a solution of tuberculin of 1 per cent. into the conjunctival sac. Pirquet's method gave 15 positive and two negative results while Calmette's method gave 12 positive and four negative results. The patients included cases of meningitis, peritonitis, lupus, cold abscess, caries of bone, pulmonary tuberculosis, and lymphoma of the neck. The last-named cases gave negative results by Pirquet's method whilst Calmette's method failed to produce any reaction in these as well as in the cases of lupus and caries of bone. The second group consisted of 35 cases, 18 of which were treated by Pirquet's method with 15 positive results, whilst 17 were treated by Calmette's method with 12 positive results. The patients comprised cases of bronchitis, pleuritis, anæmia, and catarrhal disease of the lungs. The third group consisted of 25 cases free from any suspicion of tuberculosis. Of this group 14 patients were treated by Pirquet's method with four positive results whilst 11 were treated by Calmette's method with two positive results. Dr. Kremer took care to select cases as much as possible similar to each other for the control tests. Wherever possible both tests were used in the same individual at the same time. Pirquet's reaction sometimes showed itself five hours after the inoculation but as a rule, the effect was produced in 24 hours and lasted from four to six days. Once it was visible for 11 days. Calmette's reaction occurred, as a rule, six hours after application but in one instance only after 24 hours; it lasted mostly from four to five days but in two instances for eight and 12 days respectively. In five cases the cutaneous reaction was positive whilst the ocular reaction failed to show the presence of tuberculous disease, and in four cases the eye was severely affected for some days. Dr. Kremer therefore concludes that of the two methods the cutaneous one is the more trustworthy, the easier, the less severe, and the less painful.

*Legislation Concerning Phosphorus Poisoning.*

The efforts of the sanitary and health departments with regard to the inspection of factories have resulted in the issuing by the Government of new regulations for the manufacture of matches and other articles in which the poisonous yellow phosphorus is used. The following points are worth mentioning. No person under 17 years of age and no woman who is either more than four months pregnant or has been confined within the preceding six weeks may be employed on the premises. The workers must be employed by turns in the different departments, being engaged in each for only four weeks, so that they do not come in contact with the phosphorus emanations oftener than every three months. Special attention is paid to ventilation and the regulations require it to be inspected daily. The premises where articles manufactured with phosphorus are stored must be provided with double doors and the persons engaged there must also change their occupation every few weeks. The factory workers must have special prophylactic and hygienic facilities. They must, for instance, have suits of working clothes with sleeves fitting closely at the wrist; ablution rooms and mouth-rinsing utensils must also be provided by the owner of the factory, their teeth must be regularly inspected, and a first-aid box containing antidotes must always be at hand.

*Osteomalacia and Adrenalin.*

An interesting discussion took place recently at a meeting of the Lemberg Medical Society when several cases of osteomalacia were exhibited. Dr. Groebel showed a woman aged 40 years who had been confined to bed since her last labour six years ago because she had pain in her bones and could not walk. The measurements of the pelvis and other bones had not changed during treatment, which consisted of daily injections of adrenalin in increasing doses, beginning with half a cubic centimetre (eight minims) of a solution of strength 1 in 1000. The result of 25 injections was very satisfactory as the patient could walk about without experiencing any unpleasant sensations. In addition to this example of chronic osteomalacia another patient was shown suffering from the acute type; she also was unable to walk and could hardly move her lower limbs. Tenderness on pressure was present and a marked feature was that all the long bones and the ribs could be bent on pressure. When she first came under observation she was seven months pregnant. Following Bossi's suggestion she was at once treated with one daily injection of one cubic centimetre of a solution of adrenalin of strength 1 in 10,000. During the first four days headache, high blood pressure, and a red hue of the face were noticed, but after the first week these effects disappeared until an increased dose was given which always caused unpleasant symptoms. Altogether 54 injections were given, with the result that the pains disappeared, the bones became hard, and the pelvis did not change its shape. In the discussion it was maintained that different observers had obtained different results, perhaps on account of using adrenalin obtained from different manufacturers. The danger of the indiscriminate use of this substance was pointed out, as in some animals, especially rabbits, arterio-sclerosis could be produced by injections of adrenalin. The use of phosphorus and salts of lime was recommended for the treatment of osteomalacia. This disease was said to be very rare in some countries and to be most often met with in marshy districts.

*Congress on Thalassotherapy.*

The Fourth International Congress on Thalassotherapy will be held at Abbazia on the Austrian coast of the Adriatic sea. The therapeutic use of natural mineral waters will be included among the subjects and the discussions will deal not only with the treatment of disease by sea air, sea water, and sea voyages but with hydrotherapy and balneological questions. The congress will meet from Sept. 28th to 30th and will no doubt attract many medical men from the Riviera, from Italy, and from the Netherlands.

*Surgery of the Lungs.*

At a recent meeting of the Brünner Medical Society Dr. Herzka gave an interesting synopsis of the present condition of the surgery of the lungs. He said that the prevalent idea that pneumothorax must be avoided was the chief obstacle to the development of this branch of surgery. Sauerbruch's low-pressure apparatus, Brauer's high-pressure apparatus, and Kühn's method of producing high pressure by per-oral tubage had now made the way for the surgeon an easy one, but all these methods were too complicated for ordinary operators. The same object was attained by suturing the costal and pulmonary pleuræ together. The principal danger of pneumothorax was the sudden change of blood pressure in the lesser circulation and not the diminution of the respiratory surface of the lung. The most favourable results were obtained in operations on gangrenous cavities or abscesses of the lung. For the cavities of bronchiectasis the prognosis was worse and those associated with tuberculosis were unsuitable for operation. Tumours had not often been treated surgically as the diagnosis was difficult and the prognosis was doubtful. The production of pneumothorax for the treatment of pulmonary tuberculosis had been advised by Murphy and practised sometimes with injection of nitrogen rather than of air, because the latter was absorbed too quickly. The method was useful only in unilateral cases. The latest development in this direction had been achieved by Trendelenburg who attacked a thrombus of the pulmonary artery artificially produced in a calf and succeeded in saving the animal's life.

April 10th.

# Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy of the Conjoint Examining Board held this month the following gentlemen were approved:—

Henry Bardsley, Liverpool University; John James Harkness Beckton, St. Bartholomew's Hospital; Alfred William Bevis, St. Mary's Hospital and private; Henry Dyer Scott Close, St. Thomas's Hospital; William Russell Cooper, University College; Reginald Branch Dawson, Guy's Hospital; Frederick Dunphy, Westminster Hospital and private; Frank Austin French, St. Mary's Hospital; Herbert Wilks Heasman, Guy's Hospital; John Keith Anderson Helm, Guy's Hospital; Joseph Arthur Alexander Kernahan, St. Bartholomew's Hospital; Bhagat Ram Khanna, London Hospital and private; Robert Lloyd, Sheffield University and private; Richard Turner MacRae, London Hospital; Valentine Cleeve Martyn, St. Mary's Hospital and private; Percy Uvedale Mawer, St. Bartholomew's Hospital; Reginald Arthur Morrell, St. Thomas's Hospital; Michael Wellwood Morrison, Bristol, Middlesex, and St.

Thomas's Hospitals; John Hayward Paget, Charing Cross Hospital; Michael William Phipps, Queen's College, Cork, and London Hospital; Edward Philip Stibbe, Charing Cross Hospital; and Harold Skarratt Thomas, London Hospital and private.

At the second professional examination in Anatomy and Physiology held on March 26th, 27th, 30th, and 31st, 98 candidates presented themselves for examination, of whom 53 were approved and 45 were rejected. The following are the names of the successful candidates:—

Harold George Alexander, Middlesex Hospital; Sydney Vere Appleyard, St. Thomas's Hospital; Malcolm Barker, Charing Cross Hospital; Thomas Mulholland Bellew, Liverpool University; Jamshedji Sorabji Bhajiwalla, Bombay University, Middlesex and University College Hospitals; Arthur Brodie Hamilton Bridges, St. Thomas's Hospital; William Edgar Carter, Leeds University; Eric Edmund Chipp, St. Bartholomew's Hospital; Reginald Charles Clifford, St. Bartholomew's Hospital; James Cowan, Manchester University; Ellis Patrick Crozier, Ceylon Medical College and London Hospital; George Leslie Curnock, Charing Cross Hospital; Hubert Daw, Guy's Hospital; Arthur William Donaldson, Oxford University; William Alexander Dunn, Otago University and St. Thomas's Hospital; William Hailey Eggar, Middlesex Hospital; Daniel Charles Evans, University College, Cardiff; Montague Albert Farr, Charing Cross Hospital; George Herbert Garlick, St. Mary's Hospital; Douglas Hamilton, King's College Hospital; Charles Herbert Hart, University College, Bristol; Henry Edwardes Griffiths, University College, Cardiff; George Holmes-Smith, L.D.S.Eng., King's College; William Henry Talfourd Jones, Guy's and King's College Hospitals; George Arthur Edward Kelman, Westminster Hospital; William Bertram Lawrence, University College, Cardiff; Tam Legge, Madras and London Hospital; Wilfred Edgar Levinson, Guy's Hospital; Edward Claude Linton, London Hospital; Bryen McDermott, Guy's Hospital; Reginald Kinloch MacGregor, St. Bartholomew's Hospital; Horace Lloyd Mann, St. Thomas's Hospital; Patrick John Monaghan, Guy's Hospital; Hubert Lewis Clifford Noel, London Hospital; Henry Clarence Wardleworth Nuttall, Liverpool University; Thaddeus Turner O'Callaghan, Guy's Hospital; John Francis O'Malley, L.R.C.P. & S. Irel., L.M. Dub., Dublin and King's College; William Howard Pickup, Birmingham University; Charles Edward Reckitt, Guy's Hospital; Edward Smeed, University College Hospital; Reginald Gershom Sparkes, St. Mary's Hospital; Alan Murray Stuart, St. Mary's Hospital; Richard Teodor Timberg, St. Thomas's Hospital; John Saint Andrew Titmas, L.D.S.Eng., Middlesex Hospital; Arthur John Tozer, St. Mary's Hospital; John William Trevan, St. Bartholomew's Hospital; Arthur George Trott, Charing Cross Hospital; Percival Dillon Warburton, Sheffield University; Archibald Farrell Waterhouse, Sheffield University; Harvey Henry Vincent Welch, St. Thomas's Hospital; Herbert White, St. Thomas's Hospital; Walter George Wince, L.M. & S. Calcutta, Calcutta University and St. Bartholomew's Hospital; and Walter Ansley Young, Madras Medical College and London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the ordinary Council meeting held on April 9th the following diplomas were conferred upon the undermentioned gentlemen who have passed the necessary examinations and have now complied with the by-laws of the College:—

*Diploma of Fellow.*—Joseph Bernard Dawson, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Birmingham University.

*Diploma of Member.*—Kenneth Douglas Panton, M.B. Toronto, Toronto University and London Hospital; Robert Kerr Paterson, M.D., C.M. Kingston, Queen's University, Canada, and London Hospital; and George Charles Edward Simpson, B.C. Cantab., Cambridge University and St. Bartholomew's Hospital.

*Licence in Dental Surgery.*—Andrew Robertson Walker, D.D.S. Pennsylvania, Pennsylvania University.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination held recently the following candidates passed in the subjects indicated:—

PART I.

*Biology*—R. B. F. Frazer, Charing Cross Hospital; R. H. Pettersson, Birkbeck College; and S. J. S. Reid, Royal Free Hospital.

*Chemistry.*—R. B. F. Frazer, Charing Cross Hospital; and S. J. S. Reid, Royal Free Hospital.

*Materia Medica and Pharmacy.*—E. Carter, Durham; H. R. Coombes, Cambridge and Westminster Hospital; F. C. Eberhardt, Edinburgh and Birmingham; and J. McManus, Belfast.

PART II.

*Anatomy.*—G. S. Bate and J. A. A. Boddy, Manchester; C. S. Foster, Westminster Hospital; E. A. S. Hoare, Charing Cross Hospital; A. J. V. Mathews, St. Mary's Hospital; and J. G. Reidy, Edinburgh.

*Physiology.*—G. S. Bate and J. A. A. Boddy, Manchester; J. Brearley, Leeds; P. Hirschbein, Guy's Hospital; E. A. S. Hoare, Charing Cross Hospital; J. B. Holmes, Manchester; J. G. Reidy, Edinburgh; W. G. Tickell, Middlesex Hospital; and C. B. Welsby, London Hospital.

UNIVERSITY OF DURHAM.—At the convocation held on April 4th the following degrees and diploma were conferred:—

*Doctor in Medicine.*—James Glenny Gibb, M.B., B.S. Durh.; Sampson George Victor Harris, M.B., B.S. Durh.; Arthur Holbrook Nott, M.B. Durh. (*in absentiâ*); John Cuthbert Pearce, M.B., B.S. Durh.; William Tait Sewell, M.B., B.S. Durh.; and Edward Tate, M.B., B.S. Durh.

*Doctor in Medicine for Practitioners of 15 years' standing.*—David Donald, L.R.C.P. & S., L.F.P.S. Glasg.; Benjamin William Nettlefold Gowring, M.R.C.S., L.R.C.P.; Robert Hudson, L.M.R.C.P. & S. Irel.; Walter Wingfield Nuttall, M.R.C.S., L.R.C.P.; and Robert George Reid, L.R.C.P. & S., L.F.P.S. Glasg.

*Master in Surgery (M.S.).*—James Glenny Gibb, M.B., B.S. Durh., M.R.C.S., L.R.C.P., St. Bartholomew's Hospital.

*Bachelor in Medicine (M.B.).*—Ronald Martyn Davies, Helen Mary Gurney, Arthur Henry Hogg, Ernest Lacey Markham, and Gertrude Ethel O'Brien, College of Medicine, Newcastle-upon-Tyne; Charlotte Purnell and Elizabeth Patteson, London School of Medicine for Women; Hubert Shield, College of Medicine, Newcastle-upon-Tyne; Eric Frushard Waddington, University of Leeds; Leslie Henry Walker and James Burrell Williamson, College of Medicine, Newcastle-upon-Tyne; and John Franklin Young, Guy's Hospital.

*Bachelor in Surgery (B.S.).*—Ronald Martyn Davies, Helen Mary Gurney, Arthur Henry Hogg, Ernest Lacey Markham, and Gertrude Ethel O'Brien, College of Medicine, Newcastle-upon-Tyne; Charlotte Purnell and Elizabeth Patteson, London School of Medicine for Women; Hubert Shield, College of Medicine, Newcastle-upon-Tyne; Eric Frushard Waddington, University of Leeds; Leslie Henry Walker and James Burrell Williamson, College of Medicine, Newcastle-upon-Tyne; and John Franklin Young, Guy's Hospital.

*Bachelor in Hygiene (B.Hy.).*—Robert Samuel Trotter, M.D. Aberd.

*Diploma in Public Health (D.P.H.).*—Samuel Thomas Cochrane, M.B., B.S. Durh.; Lilian Mary Chesney, M.B., Ch.B. Edin.; Edward Guy Dru Drury, M.D., B.S. Lond.; George Pillans Harlan, M.D., Ch.B. Glasg.; and Robert Samuel Trotter, M.D. Aberd.

UNIVERSITY OF ABERDEEN.—The following degrees were recently conferred:—

*Doctor of Science (D.Sc.).*—John Wishart.

*Bachelor of Science (B.Sc.).*—Christian Davidson Maitland, James Fowler Tocher, Charles Cumming Calder, James Graham Darling, and Hugh Sinclair Robertson.

*Doctor of Medicine (M.D.).*—William Flett Croll, William Sim Garden, James Robertson, and Lieutenant-Colonel Henry Thomson.

*Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.).*—With First-class Honours: James Watt. With Second-class Honours: Thomas Craig Boyd. Ordinary Degree: John Anderson, Alex. Andrew Bisset, John Brown, Donald Buchanan, James Burr Cruickshank, James Gordon Danson, George Davidson, Adam Gilchrist, James Alexander Hendry, M.A., B.Sc., Edward Johnson, James William Littlejohn, William George Macdonald, James Davidson Mackay, John Farquhar Macleod, Rae McRae, Allan Massey, William Mearns, Arthur James Milne, Thomas Burtonshaw Nicholls, Ian Ogilvie, Arthur William Rettie Pirie, Douglas Porter, John Rennie, Robert Ross, Andrew James Shinnie, William Alexander Watson, William Gordon Watt, Maurice Joseph Williamson, and Douglas Wood.

The following gentlemen have been awarded the Diploma in Public Health:—

William Begg, M.B., Ch.B. Aberd., John Hay Moir, M.B., Ch.B. Aberd., and George Scott, M.B., C.M. Aberd.

THE CENTRAL MIDWIVES BOARD.—At a meeting of the Central Midwives Board held at Caxton House, Westminster, on April 9th, Dr. F. H. Champneys was re-elected chairman and received the thanks of the Board, expressed by Mr. E. Parker Young, who said that the Board wished to recognise their appreciation of Dr. Champneys's work by re-electing him to the office of chairman. Mr. H. G. Fordham was re-elected honorary treasurer. The action to be taken on the Board's resolution of March 19th as to the payment of fees of medical practitioners summoned to assist midwives in emergencies was considered and the Board decided:—

1. That the Privy Council be asked to furnish the Board with a return showing the boards of guardians which have adopted the suggestions of the Local Government Board as to the payment of medical fees contained in the Circular of July 29th, 1907.

2. That it be referred to a meeting of the Standing Committee to frame a statement on the subject to be submitted to the Privy Council.

3. That when the return has been furnished the Privy Council be asked to receive a deputation of the Board (*a*) on the subject of the payment of the fees of medical practitioners summoned to assist midwives in emergencies, and (*b*) concerning the following propositions affirmed by the Board on March 19th: (1) That midwives (who are "a necessity") will be unable to make a living in many localities without extraneous aid; (2) that such localities are very often exactly those in which their presence is most necessary from the poverty and (in some cases) the sparseness of the population; (3) that voluntary contributions cannot be relied upon to supply the whole of the necessary financial aid; and (4) that for this purpose a Government grant is a necessity.

Letters were then considered from the medical secretary of the British Medical Association as to the statement in the Board's letter to the Privy Council of Feb. 15th referring to the hostility existing in some districts between the medical profession and midwives. The Board decided that the reply be that the statement referred to was founded on communications to the Board, on communications which have appeared in the *British Medical Journal* and Supplement thereof, in the medical and nursing press in general, and on facts within the knowledge of members of the Board. At the request of Mr. Parker Young the report of Miss F. M. Bernard-Boyce, inspector and superintendent of midwives for the county of Norfolk, was read from the issue of the *Eastern Daily Press* dated April 2nd,

1908, in which it was stated that she understood "that the medical men in the county of Essex have refused to attend any emergency summons from a midwife. Also in the East-End of London the medical men have issued their refusals, and from correspondence she had received she fears that the same movement is unfortunately spreading in Norfolk." A letter was considered from Dr. C. J. Nepean Longridge suggesting that midwives should possess some knowledge of the warning symptoms of cancer of the uterus. At the request of the Board the chairman undertook to draft a leaflet on the subject for distribution to midwives, teachers, and local supervising authorities. A letter was considered from the Clerk of the London County Council as to the proposed inspection of the maternity wards of the Poplar workhouse. The Board decided that the Local Government Board should be requested to reply to the questions comprised in the instructions to the Board's inspector so far as applicable.

ASSOCIATION OF MEDICAL MEN RECEIVING RESIDENT PATIENTS.—The annual general meeting of this association was held at 26, Bryanston-street, W., on March 31st, Dr. David Walsh, the President, being in the chair. The honorary secretary reported a considerable increase in the number of applications from persons desiring to place resident patients with medical men, and also of medical men wishing to join the association. One effect of transferring the secretaryship from Bournemouth to London had been that it was found possible to expedite the work of bringing applicants and medical men into contact with each other, and consequently the number of patients placed with members of the association had shown a distinct increase. The balance in hand was substantial and there were no outstanding accounts. The honorary secretary was thanked for the time and trouble which he had given to the work of the association and various alterations which experience showed to be advisable were made in the rules. The amount payable by members for joining the association was reduced from £1 10*s.* 6*d.* to £1 1*s.*, the subscription in subsequent years being retained on the old basis—namely, 5*s.* The principle that no member should take less than three guineas a week for a patient, except under exceptional conditions, was reaffirmed. A discussion took place as to the means for making the association more widely known, as it was felt that owing to its voluntary nature and its government by members, all of whom are registered medical practitioners, the profession would gladly support the association even more warmly than in the past if they were better acquainted with it.

PRACTICAL TRAINING IN FOOD AND MEAT INSPECTION.—A special course of training for commissioned officers and professional men preparing for the examination for inspectors of meat and other foods, conducted by the Royal Sanitary Institute, will commence on Monday, April 27th, at 7 P.M., and will consist of practical training in the inspection of foods and meat, including demonstration on live cattle and sheep, slaughtering and dressing of animals, names and situations of the organs, diseases of animals, methods of stalling, arrangement of markets and byres, &c., at a cattle market. Demonstrations will also be arranged at a knackers' yard, where instruction regarding the flesh and organs of the horse will be given. The course will include ten lectures and demonstrations by Mr. James King, M.R.C.V.S., veterinary inspector of the Metropolitan Cattle Market, on Meat Inspection, of which the six lectures will be delivered in the Parkes Museum, at 5.30 P.M., on the following dates: Tuesday, April 28th; Wednesday, April 29th; Tuesday, May 5th; Tuesday, May 12th; Wednesday, May 13th; and Friday, May 15th. The four demonstrations will be given at the Metropolitan Cattle Market at 3 P.M. on Saturday, May 2nd; Saturday, May 9th; Saturday, May 16th; and Saturday, May 23rd. Two lectures will be delivered by Professor H. R. Kenwood in the Parkes Museum at 5 P.M. on Monday, May 11th, and Thursday, May 14th, on Tinned and Potted Food, and Milk, Butter, and Cheese respectively. Four lectures will be delivered by Colonel J. Lane Notter, R.A.M.C., in the Parkes Museum at 5 P.M. on the following dates:—Monday, May 18th, Fish, Eggs, Tea, Coffee, Cocoa and Chocolate, and Lime Juice; Tuesday, May 19th, Wheat, Rice, Arrowroot, and other Grains, Potatoes, Flour, Bread, Biscuits, and Sugars; Wednesday, May 20th, Succulent Vegetables and Fruits, Jams, the Condiments—Vinegar, Pepper, Mustard, and Prepared, Concentrated, and Preserved Foods; and Thursday, May 21st, Alcoholic Beverages—Beer, Wines, Whisky, and Brandy. On Friday, May 22nd, a visit to a factory for preparation of concentrated and preserved foods has been arranged. In addition to the special lectures the students will have the privilege of attending the lectures and demonstration (in connexion with the course for sanitary officers) given in the Parkes Museum, Margaret-street, W., during April and May by Major J. A. Meredith, F.R.C.V.S., Dr. E. Petronell Manby, medical inspector, Local Government Board, and Mr. King. Inspection and demonstration in fish inspection and in knackers' work will also be given in this course, for which the fee is £5 5*s.* Those desirous of attending the course are requested to send in their names at once to Mr. E. White Wallis, the secretary of the institute, Margaret-street, W., who will supply more detailed information.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.—The annual provincial meeting of this society will be held at Harrogate on Saturday, May 16th, at 3.15 P.M., when the Fellows will meet at the Royal Baths, where they will be received by the Mayor and Bath officials. A reserved corridor carriage will leave King's Cross Station, London, at 10 A.M., arriving at 2.15 P.M. Short papers will be read on the Meteorology and Geology of Harrogate by Mr. Fox Strangways, and on the Therapeutics of the Waters and Treatment by Dr. Frederick Lever, President of the Harrogate Medical Society. At 4 30 P.M. the society and its guests will inspect the Harrogate Baths. At 7 P.M. the Fellows' dinner will be held at the Hotel Majestic, Harrogate, and at 9 P.M. the Fellows and their guests are invited by the Kursaal Committee to attend the entertainment at the Kursaal without charge. On the following day (Sunday) with the coöperation of Mr. G. R. Green, medical officer of health of Ripon and a member of the society, a trip by train or motor-cars will be made to Ripon which will be reached in time for the service at 11 A.M. at the historic cathedral. At 1 P.M. lunch will be taken at the Spa Hotel, Ripon, by invitation of the proprietors of the hotel, free to Fellows only. At 2.30 P.M. a visit will be paid to Studley Royal, the seat of the Marquis of Ripon, and the monastic ruin of Fountains Abbey. The return to Harrogate will be made in time for dinner. On Monday, May 18th, a train will leave Harrogate at 10 10 A.M. for the return journey to London. Fellows may take their wives and daughters and are allowed to invite medical guests who will all be permitted to dine at the Fellows' dinner and their hotel expenses will be charged at the same rate as for the Fellows—viz., 1 guinea each from Saturday afternoon to Monday morning, including all meals excepting lunch on Sunday. The honorary secretaries are Dr. S. P. Sunderland, 11, Cavendish-place, Cavendish-square, London, W., and Dr. F. A. de T. Mouillot, Elm House, Harrogate, who desire to learn as soon as possible the number of Fellows and guests likely to be present.

INTERNATIONAL DRAWING CONGRESS. — The British committee of this congress, of which the patron is H.R.H. the Prince of Wales, and the chairman Sir J. E. Gorst, K.C., LL.D., is finding some difficulty in making its significance known in this country and arousing the local interest and activity which are necessary to prepare for it. Foreign Governments assist their own delegates and some 25 countries will be represented, but as far as this country is concerned the expenses of the congress must be defrayed by voluntary subscription and towards the £5000 required only about £1700 have been given or promised. The first congress was brought about in Paris during the exhibition of 1900 by the Friendly Association of Teachers of Drawing (L'Association Amicale des Professeurs de Dessin). The second congress was held at Berne in 1904 and was attended by 400 members of the association whose expenses were partly defrayed by the French Government. The British representatives at these congresses were deeply impressed by the enthusiasm of their foreign colleagues, by the very liberal measure in which continental schools are assisted by public funds, and by the clear and strong claims made and allowed for drawing, first as an educational exercise and then as a preparation for industrial and professional life. The committee states that it is not the usual practice in this country to correlate art with other studies and that business men in general have not been taught to think of art as a practical thing. Closer coöperation is desired in this country between the schools where applied

art is fostered and the workshops and factories, so that they may "feed" each other and support each other in the education and utilisation of industrial artists. In respect of buildings and material with the object of practical art Berlin was considered to hold the lead, but was followed closely by other continental cities. The committee also states that "Doctors, who need drawing for purposes of demonstration, and lawyers, who not only have to understand its common uses in the trades but may be called upon to judge and plead in matters affecting the Fine Arts, are for the most part unprepared for these duties." Local exhibitions in preparation for the congress are now being held or organised throughout the country. The offices of the committee are at 151, Cannon-street, London, E.C.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—A quarterly court of the directors of the above society was held on April 8th at 11, Chandos-street, Cavendish-square, W., Dr. G. F. Blandford, the President, being in the chair. 16 directors were present. Five new members were elected and the death of one was reported. Since the last court two widows, annuitants of the charity, had died. One had been on the funds since 1873 and had received in grants £1500; her husband had paid in subscriptions £19 19*s*. The other had been in receipt of grants since 1905 and had received £205; her husband had paid in subscriptions £52 10*s*. A letter of condolence was sent to Lady Agnes Cooper on the death of her husband, Sir Alfred Cooper, who had been a director of the society. The report and audited accounts of the society for 1907 to be submitted at the annual general meeting were approved. The secretary reported that he had since the last court received eight letters from widows of medical men asking for relief, but this had in each instance to be refused, as their husbands had not been members of the society. Relief is only granted to the widows or orphans of deceased members. Any registered medical practitioner who at the time of his election is residing within a 20-mile radius of Charing Cross is eligible for membership. The subscription is £2 2*s*. a year, paid in one sum or in two half-yearly ones of £1 1*s*. each. Full particulars may be obtained from the secretary. The invested funds of the society amount to over £99,000. The annual general meeting will be held on May 14th, at 5 P.M., at the offices of the society.

THE NEW MANCHESTER INFIRMARY. — An important meeting of the people of Manchester and the surrounding districts convened by the Lord Mayor of Manchester was held on April 7th in the town-hall for the purpose of considering the present financial condition and the future requirements of the new infirmary. The estimated expenditure on the new building in Oxford-road and on the provision of a central branch is £525,000, towards which there is a sum available of £425,000, including the £400,000 from the corporation, the purchase price of the old infirmary, so that £100,000 to complete the undertaking must be raised. The estimated cost of maintenance is £34,500, while the available income is £22 500, leaving a further annual sum of £12,000 to be provided. This looks a formidable undertaking but the Lord Mayor has attacked it with courage. The accommodation at the old infirmary was limited to 292 beds and so could not do nearly the amount of work required of it. The Lord Mayor said that he approved of the erection of the present building, for it would not have been wise to build an infirmary too small for present requirements. He saw no signs of extravagance in the new building itself and the money had been so spent "that 20*s*. had never been spent where 19*s*. would have done." He reminded the meeting that the infirmary had claims on the whole of Lancashire, Cheshire, South Yorkshire, and Derbyshire and concluded by proposing a motion expressing the sense of the meeting of the value of the services of the infirmary for a century and a half to the sick poor of Manchester and the neighbouring counties. The Bishop of Manchester followed with a strong and logical speech in support of the view expressed by the Lord Mayor, that the strongest though perhaps the lowest of all sentiments, that of self-interest, commended work like that of the infirmary to support. It benefited not only the poor but the wealthy. Other speakers followed and at the close of the meeting it was announced that considerably over £24,000, including amounts promised during its course, had been the response, so far, to the special appeal. The Lord Mayor thought it an exceedingly good start that so much had been raised before a general appeal to the public had been made. It is to be hoped that the response will come largely from those who cannot give large sums and yet do not wish to be deterred from giving what they can. As the Bishop said, he could not, out of the "fatal opulence" of a Bishop, promise anything like £1000, but he would do all he possibly could for their great cause.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*The Progress of Legislation*

NEARLY 200 Bills have been introduced in the House of Commons since the meeting of Parliament in the end of January, but comparatively few of them have yet received a second reading. Several measures, including the Children's Bill with its provisions aimed against juvenile smoking, have reached the committee stage. Mr. HIGHAM'S Coroners' Inquests Bill is also before a standing committee. Several unsuccessful attempts have been made by Sir JOHN BATTY TUKE and those associated with him to induce the House to assent to the second reading of the Prohibition of Medical Practice by Companies Bill after 11 o'clock at night. Objection has invariably been raised, the consequence of which at such an hour is to delay the progress of the Bill. Amongst the measures which are now on the notice paper of the House awaiting second reading are the Coroners' Inquests (Railway Fatalities) Bill, the Housing and Town Planning Bill, the Nurses Registration Bill (Mr. CLAUDE HAY'S measure), the Nurses Registration (No. 2) Bill (Mr. MUNRO FERGUSON'S measure), the Parochial Medical Officers (Scotland) Bill, the Pharmacy Bill, the Public Health Bill (Mr. G. J. COOPER'S measure), the Public Health Officers Bill, the Purity of Milk-Supplies (Scotland) Bill, the Sale of Food and Drugs Acts (Amendment) (Scotland) Bill, the Sale of Whisky Bill, and the Vivisection Bill.

In the House of Lords the number of Bills introduced is far less than in the Commons. One measure which their lordships have read a second time is the Poisons and Pharmacy Bill. A joint committee of both Houses of Parliament is engaged in taking evidence on the points raised in it.

*Inspection of Factories and Workshops.*

The supplement to the annual report of the Chief Inspector of Factories and Workshops for the year 1908, which has just been issued as a Parliamentary paper, is rather belated, but it gives statistical information with regard to the work carried out by medical officers of health in this period under the Factory and Workshop Acts. It is stated that 1855 reports of medical officers of health were due to be received from England and Wales for the year 1906 but only 1811 came to hand at the Home Office. From Scotland 325 reports were due to be received and of them 322 actually were received. For Ireland 769 reports were due but only 303 actually came to hand. The number of inspections made by medical officers of health during the year in pursuance of their duties with regard to factories, workshops, and workplaces is set down as 459,856 for the United Kingdom. It is recorded that 373,116 were made in England and Wales, 70,418 in Scotland, and 16,322 in Ireland.

*The Reconstructed Ministry.*

The resignation of Sir HENRY CAMPBELL-BANNERMAN of the post of Prime Minister and the reconstruction of the Ministry under the leadership of Mr. ASQUITH have brought about several important changes in the Government. Mr. LLOYD GEORGE becomes Chancellor of the Exchequer and Mr. CHURCHILL succeeds him as President of the Board of Trade. Lord TWEEDMOUTH takes the position of Lord President of the Council and Mr. MCKENNA is the new First Lord of the Admiralty, whilst Mr. RUNCIMAN succeeds him as Minister for Education. The Earl of CREWE takes up the duties of Colonial Secretary, with Colonel SEELY in the House of Commons as his under-secretary. Mr. GLADSTONE remains as Home Secretary, with Mr. HERBERT SAMUEL as the under-secretary. Mr. BURNS continues as President of the Local Government Board and Mr. MASTERMAN takes the office of Parliamentary Secretary to this department in place of Mr. MACNAMARA, who is now Secretary to the Admiralty. There are a few other changes, but the ones enumerated are the most important. Medical men will be interested in the elevation of the position of the President of the Local Government Board to first-class official rank, as evidenced by the proposed increase of salary, as the State Medicine of the country is administered in this department.

*Easter Vacation.*

The House of Commons met on Tuesday in order that the writs for the elections necessitated by the Cabinet changes might be ordered. There were a large number of questions on the notice paper, including one or two of medical interest, but these were not answered. The House adjourned until Monday, April 27th.

# Appointments.

*Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to* THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BARTON, W. E., M.D. Durh., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Post Office at Streatham.

DALBY, A. W., L.R.C.P. & S. Edin., has been appointed Assistant Medical Inspector of Schools for the Frome District of Somerset.

DIX, CHARLES, M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Officer of Schools for the Shepton Mallet District of Somerset.

DOMINY, GEORGE HERBERT, L.R.C.P. Lond., M.R.C.S., has been appointed District Medical Officer by the Blandford (Dorset) Union.

HOLLANDER, BERNARD, M.D., M.R.C.S., L.R.C.P. Lond., has been appointed Physician to the British Hospital for Mental Disorders and Brain Diseases, Camden-road, N.W.

JAMES, A. M. A., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Kingscliffe District of the County of Northampton.

LAWSON, J. WARD, M.R.C.S., L.R.C.P. Lond., has been appointed Physician to the British Hospital for Mental Disorders and Brain Diseases, Camden-road, N.W.

MANSON, KENRED, M.B., B.S. Dunelm, has been appointed House Physician to the Royal South Hants and Southampton Hospital.

MOORHEAD, R. E., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Assistant Medical Inspector of Schools for the Bath District of Somerset.

NICHOLLS, A. R., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Inspector of Schools for the Langport District of Somerset.

NORMAN, JOSEPH CLEMENT ARTHUR, L.R.C.P. Lond., M.R.C.S., has been appointed District Medical Officer by the Poole (Dorset) Board of Guardians.

PARSONS, J. F., M.R.C.S., L.S.A., has been appointed Assistant Medical Inspector of Schools for the Frome District of Somerset.

PIERSE, THOMAS, L.R.C.S. Irel., L.K.Q.C.P. Irel., L.A.H., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Wexford District of the County of Wexford.

POLLARD, G. S., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Inspector of Schools for the Frome District of Somerset.

SHIPWAY, F. R., M.D., B.C. Cantab., has been appointed Honorary Anæsthetist to Guy's Hospital.

THOMAS, FRANK LESLIE, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed District Medical Officer and Medical Officer to the Workhouse by the Barnstaple (Devon) Board of Guardians.

WALTER, R. H., M.B., M.S. Edin., has been appointed Assistant Medical Inspector of Schools for the Yeovil District of Somerset.

WOOD, C. R., M.D., B.S. Durh., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Shoreham District of the County of Sussex.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

BANGOR, CARNARVONSHIRE AND ANGLESEY, INFIRMARY.—House Surgeon. Salary £80 per annum, with board, washing, and lodging.

BERMONDSEY MEDICAL MISSION.—Senior Assistant (female). Salary £75 per annum, with board and lodging.

BLACKBURN AND EAST LANCASHIRE INFIRMARY.—Junior House Surgeon. Salary £70 per annum, with board, washing, &c.

BOOTLE HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and apartments.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £100.

BRIDGEND, GLAMORGAN COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £150 per annum, with board, apartments, attendance, and washing.

BRISTOL GENERAL HOSPITAL.—Assistant House Physician. Salary £80, with board, residence, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Out Physician.

CANCER HOSPITAL (FREE), Fulham-road, London, S.W.—Honorary Physician. Also Dental Surgeon.

CARMARTHEN, JOINT COUNTIES LUNATIC ASYLUM.—Second Assistant Medical Officer. Salary £160 per annum, with board, lodging, washing, and attendance.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

EAST SUFFOLK AND IPSWICH HOSPITAL.—Senior House Surgeon. Salary £80, with board, washing, &c.

EGYPTIAN GOVERNMENT, KASR EL AINY HOSPITAL.—Resident Surgical Officer. Salary £250 per annum, with quarters, servants, washing, coal, and light.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge road, London, S.E.—Honorary Anæsthetist. Also House Physician for nine months, and House Surgeon for six months. Salary in each case at rate of £60 per annum, with board, residence, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, also Assistant Casualty Medical Officer, both for six months, and unmarried. Salary in each case £20, with board and residence. Also House Physician, unmarried, for six months. Salary £20, with board and residence.

LEICESTER INFIRMARY.—Second Resident Medical Officer. Salary £120 per annum, with rations, apartments, and washing.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary £30, with board, residence, and washing.

LONDON HOSPITAL, Whitechapel.—One Medical and Two Surgical Registrars. Salary in each case £100 per annum.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Assistant Surgeon.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, residence, and washing.

MANCHESTER, UNIVERSITY OF.—Senior Demonstrator in Physiology. Salary £150, rising to £200 per annum.

MARGATE, ROYAL SEA-BATHING HOSPITAL.—Resident Surgeon. Salary at rate of £80 per annum, with board and residence.

MEDICAL MISSION HOSPITAL, SETTLEMENT OF WOMEN WORKERS, Canning Town.—Assistant Doctor (female) for six months. Board, residence, and laundry.

MIDDLESEX HOSPITAL, W.—Second Assistant to the Director of the Cancer Research Laboratories. Salary £200 per annum.

MONMOUTHSHIRE EDUCATION COMMITTEE.—Two Assistant Medical Officers (one male and one female). Salaries for each £250 per annum, rising to £300 per annum, and travelling expenses.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—School Medical Officer. Salary £300 per annum and travelling expenses.

NORTHUMBERLAND, TYNEMOUTH INFIRMARY.—Two House Surgeons. Salary £50 per annum each, with rooms, board, &c.

NOTTINGHAM CITY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician, also House Surgeon, both for six months. Salaries at rate of 50 guineas per annum, with board and residence.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Assistant House Surgeon. Salary at rate of £80 per annum, with board and residence.

PRESTON, COUNTY BOROUGH OF.—Schools Medical Officer. Salary £250 per annum.

PRESTON, LANCASHIRE EDUCATION COMMITTEE.—School Medical Superintendent. Salary £500 per annum, rising to £650, with expenses.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary is at rate of £50 per annum, with board, residence, and washing. Also Physician to Out-patients.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £80 per annum, with rooms, commons, and washing.

ROYAL DENTAL HOSPITAL, Leicester-square.—Morning House Anæsthetist. Salary £50 per annum.

ROYAL NAVY, MEDICAL DEPARTMENT.—Examination for not less than 15 Commissions.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon. Salary £100 per annum.

ST. ANDREWS, UNIVERSITY OF.—Chandos Professorship of Physiology in the United College, St. Andrews.

ST. GEORGE'S HOSPITAL.—Resident Anæsthetist. Salary at rate of £50 per annum, with board and lodging.

SINGAPORE, STRAITS SETTLEMENTS, MUNICIPAL HEALTH DEPARTMENT.—Assistant Municipal Health Officer, unmarried. Salary $4200, rising to $4800.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £70, with board and residence.

SOUTHEND-ON-SEA, BOROUGH OF.—Medical Officer of Health. Salary £550 per annum.

SOUTH UIST (Southern Division).—Medical Officer. Salary £77 10*s*.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £200, with board, lodging, and attendance.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary £40 per annum, with board, washing, and residence.

SUNDERLAND INFIRMARY.—House Surgeon. Salary £80 per annum, with board, residence, and washing.

TWICKENHAM URBAN DISTRICT COUNCIL.—Medical Inspector of Schools. Salary £150 per annum. Also Health Visitor and School Nurse. Salary £85 per annum. Both females.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Honorary Registrar and Pathologist.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £70 per annum, with apartments, board, and laundry.

# Births, Marriages, and Deaths.

## BIRTHS.

ARCHIBALD.—On April 7th, at Chapel-place, Ramsgate, the wife of Richard J. Archibald, M.R.C.S., L.R.C.P., of a daughter.

HAYWARD.—On April 9th, at The Grange, Wimbledon, the wife of John Arthur Hayward, M.D., F.R.C.S., of a daughter.

## MARRIAGE.

MACKAY—CROMMELIN BROWN.—By Spanish law, at Huelva, Spain (the domicile of the bridegroom), and afterwards on 13th April at the Langham Hotel, London, by the Rev. David Macdonald, B.D., of Manchester, William Alexander Mackay, F.R.C.S. and M.D. Edin., to Louisa Emily Crommelin, daughter of the late John Crommelin Brown, of the Indian Civil Service, and Mrs. Crommelin Brown, of 14, Ainslie-place, Edinburgh.

## DEATH.

BROWNE.—On April 9th, Oswald Auchinleck Browne, M.A., M.D. Cantab., F.R.C.P., of Upper Wimpole-street, aged 52 years.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## CHAMPAGNE AT 1s. PER PINT BOTTLE.

AT Bow-street police court recently George Henry Kemp was summoned for selling at an address in High Holborn foreign wine without a licence and also with selling "sweets" and "made wines" without a licence. The defendant pleaded guilty and the explanation was offered on his behalf that he was duly licensed to manufacture British wines and to sell foreign wines at Walthamstow and that he thought that the latter licence covered sales made at his address in High Holborn. He was fined £20 with 2s. costs. Incidentally to the prosecution for selling without a licence it was proved that the attention of the Inland Revenue authorities had been attracted by advertisements in the newspapers offering champagne at 1s. per pint bottle and representing that the wine was made in England from imported grapes under Government supervision. It was explained that the Commissioners of Inland Revenue repudiated the last statement, as they exercised no supervision over any such manufacture, but it may be suggested that the licence under which the wine was produced and which probably prompted the vendor to claim some sort of Government authority for its production has a parallel in the stamp which is placed on "patent medicines" for revenue purposes and which, as is well known, deceives ignorant people into a belief that such nostrums are compounded under the direct authority of the Government. In the case in question the description of the wine as "champagne" constituted it a foreign wine for the purpose of the prosecution. "Champagne" indicates a country of origin, just as the name "port" is properly applicable only to the wine made in a certain district of Portugal and shipped from Oporto. Possibly a qualifying statement such as that made in the advertisement mentioned above to the effect that the "champagne" sold in High Holborn was made in England may protect the seller of "sweets" (as such wines are called technically) from legal proceedings of the kind taken with regard to "port" from Spain and mentioned recently in THE LANCET (March 21st, p. 907), but it is worth noticing that wine called "champagne" and sold in bottles made up to resemble bottles containing champagne can be made, advertised, and sold at the modest price of 1s. per pint, and it may be suggested that any use of the term "champagne" on what is apparently a champagne bottle may deceive ignorant purchasers as to the nature and quality of what they are obtaining. The matter is of some interest to medical men who on occasions may order champagne to be drunk by persons not able to afford high prices, or may permit it to be drunk, or may be called upon to treat persons who have drunk it.

## LONGEVITY AT BRIGHTON.

*To the Editor of* THE LANCET.

SIR,—In THE LANCET of April 4th, p. 1041, I see you have a note on longevity and you make mention of Jeremiah Simmons, who is a most remarkable man for his years. On the day he reached centenarianism he was up and dressed by 8 o'clock in the morning, shaved himself (as he does daily), read his paper without spectacles (he has never worn glasses of any kind), signed his name at least 50 times, received dozens of visitors, went to bed at 9.30, and told me that it was one of the happiest days of his life and that he felt no fatigue from the excitement of the day.

I have been taking notes recently at Brighton respecting longevity, because there can be no doubt that the splendid air of Brighton is conducive to longevity, and also because I notice that men of 80 years of age (whom I have known since I was a boy) are still pursuing their ordinary avocations, strong, vigorous, and energetic. Only last week an old person (Mrs. Baker) died there in her ninety-ninth year and her faculties were unimpaired to the end. Since 1900 the following centenarians have died at Brighton, the majority of whom had been lifelong residents:—Charles Green, 101 years; Miss Shergold, 105 years; Mrs. Walter Cobbold, 100 years; Miss Margaret Baker, 100 years; Mrs. Fairman, 100 years; Surgeon-Major Bowron, 101 years; Mrs. Colwell, 101 years and seven months; Mrs. Priestley, 100 years; Captain W. Sitwell, 100 years (all but ten weeks); and Mrs. Harbor, 100 years. I know of three men aged 98 years and four women 98, 97 (two), and 96 still living there, and old John Sorrell, 96 years of age, walked a mile in the rain last December to receive a poor-box bounty. I believe no other town can show similar figures.

I am, Sir, yours faithfully,

J. P. BACON-PHILLIPS.

Crowhurst Rectory, Sussex, April 10th, 1908.

## ROYAL HOSPITAL FOR INCURABLES, DONNYBROOK: A CURIOUS CASE.

A REMARKABLE object-lesson was given to the public by the result of an inquiry held at the Royal Hospital for Incurables, Donnybrook (Dublin), as to the circumstances attending the death of an inmate, which took place on April 11th. On the morning of that day the medical officer of the institution had his attention arrested by finding the deceased man in a deep sleep, which was unusual, as he was in a very emaciated and restless, as well as hopeless, condition. He was awakened by the medical officer who asked him whether he had taken any soporific. He denied having done so, but on searching the bed a bottle of chlorodyne and some five-grain tabloids of sulphonal were discovered. On being asked how these came into his possession he said that they had been given by a lady visitor. This statement was promptly denied by the lady named when inquiry was made and no further information on that head could be obtained. The patient died at 6 P.M., the medical officer stating that the drugs hastened death but a very short time. Death was attributed by the medical officer to "cardiac failure, accelerated by the action of drugs." The coroner expressed the hope—with regard to bringing in the drugs—"that whoever has done this will if it reaches their ears be warned for all time against doing such a thing." The jury found a verdict in accordance with the medical evidence, adding: "We desire to condemn in the strongest way the practice of any visitor introducing drugs or other medicines into the hospital without the knowledge of the medical staff, and we further desire to place on record our appreciation of the skill and care bestowed by the medical staff of the institution in their treatment of the patients."

## JORDAN WATER.

*To the Editor of* THE LANCET.

SIR,—Can any of your readers inform me where I can procure a small quantity of Jordan water for baptismal purposes?

I am, Sir, yours faithfully,

April 7th, 1908. A. B. C.

## "WOLSEY" UNDERWEAR.

WE have received from Messrs. R. Walker and Sons of Leicester samples of their "Wolsey" underwear in different thicknesses. We have given the garments, which answer to the tests for pure wool of good quality, a thorough trial and we recommend them to our readers. They have a soft finish which makes them very comfortable to wear and they are thoroughly well cut. They are guaranteed unshrinkable and the manufacturers inform us that the goods are made in their factories under the most hygienic conditions. A member of our staff who fences regularly says that the garment which we asked him to try for us—it was a jersey of medium thickness—is the most comfortable jersey in which to fence that he has yet worn, and anyone who knows how profusely the fencer sweats and how essential it is that his movements should be made with the utmost rapidity will recognise that the testimony is of value. We consider that in their "Wolsey" underwear Messrs. Walker and Sons are providing the public with excellent wares.

*Rixon* cannot borrow on a life policy in the way suggested unless he can produce sureties for keeping up the premiums.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

# Medical Diary for the ensuing Week.

## SOCIETIES.

**ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.**

FRIDAY.

ELECTRO-THERAPEUTICAL SECTION (Hon. Secretary—Reginald Morton): at 8.30 P.M.

*Paper:*

Dr. Reginald Morton: The Electrical Treatment of Atonic Conditions of the Digestive System.

*N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.*

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**POST-GRADUATE COLLEGE, West London Hospital, Hammersmith road, W.**

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Mr. Dunn: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eye. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Mr. Dunn: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children, 2 P.M., Medical and Surgical Clinics X Rays. Dr. K. Scott: Diseases of the Eye. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY.—3 P.M., Dr. F. Thomson: Demonstration on Fevers (at the North-Eastern Fever Hospital, St. Ann's-road, N.).
WEDNESDAY.—2.30 P.M., Diseases of the Skin (Dr. Meachen); Diseases of the Eye (Mr. Brooks).
THURSDAY.—2.30 P.M., Medical Out-patient Clinic (Dr. Whiting); X Rays (Dr. Pirie).
FRIDAY.—2.30 P.M., Operations. Medical Out-patient Clinic (Dr. Auld); Diseases of the Eye (Mr. Brooks); 3 P.M., Medical In-patient Clinic (Dr. Leslie).

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (20th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), West London (2.30 P.M.).

**TUESDAY (21st).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

**WEDNESDAY (22nd).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

**THURSDAY (23rd).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.).

**FRIDAY (24th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

**SATURDAY (25th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

## EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

*It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.*

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## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, April 15th, 1908.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| April 9 | 30·07 | E. | ... | 76 | 53 | 37 | 39 | 42 | Fine |
| ,, 10 | 29·93 | N. | 0·04 | 90 | 49 | 42 | 44 | 46 | Cloudy |
| ,, 11 | 29 84 | ENE | ... | 56 | 47 | 43 | 43 | 44 | Overcast |
| ,, 12 | 29 94 | N.E. | ... | 65 | 52 | 41 | 43 | 45 | Raining |
| ,, 13 | 30·15 | N.E. | 0·02 | 97 | 50 | 37 | 39 | 42 | Fine |
| ,, 14 | 30·19 | N.E. | ... | 80 | 48 | 33 | 39 | 42 | Cloudy |
| ,, 15 | 30·20 | N.E. | ... | 91 | 50 | 39 | 40 | 43 | Cloudy |

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